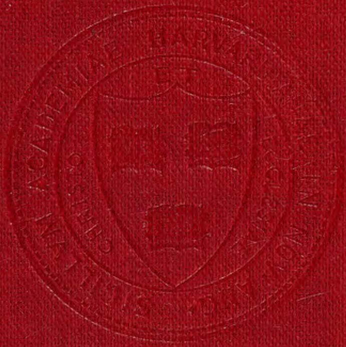

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ECONOMIC MOTIVES

A STUDY IN THE PSYCHOLOGICAL FOUNDATIONS OF ECONOMIC THEORY, WITH SOME REFERENCE TO OTHER SOCIAL SCIENCES

BY

ZENAS CLARK DICKINSON, PH.D.
ASSISTANT PROFESSOR OF ECONOMICS IN THE
UNIVERSITY OF MINNESOTA

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PREFACE

THE following essay grew out of a doctoral thesis presented at Harvard University in 1919, and it was submitted in the Wells Prize competition in 1920.

It seems impossible to find a title that accurately and briefly covers the field of the inquiry. This field may be called the psychological problems and postulates of economics, which are most conspicuous, of course, in the matter relating to Wants, Self-Interest, Value, Interest and Wages. These psychological questions are concerned, I believe, not only with seeking the chains of causation which make economic behavior what it is, and what it might be, but also with examining the effects of such activities on human welfare. In other words, it appears that there are psychological problems involved in the fullest investigation of Production and Economic Welfare, as well as of Value and Distribution.

The main purpose of this essay is to gather up whatever material is to be found in psychological science that offers help in dealing with the above problems, and to present this material briefly in a manner intelligible to the economist or other social scientist. A considerable background of psychological fundamentals is given (in Part II), the relevancy of which may not be apparent, for the reason that the psychological vocabularies now current in social science discussions are too confused to admit of clear statements unless one's own presuppositions are made quite explicit. The relevancy of the historical chapters (in Part I) to my main purpose may also be questioned, and perhaps they are over lengthy. But discussions of our topics in the past have clustered largely around the social-psychology dogma that economic theory suffers from false assumptions as to the "rationality" of human behavior in regard to wealth, such misapprehensions being traced usually to the Utilitarians; and since my study of associationist and modern psychology convinced me that there is very much less discrepancy between the two than the above dogma assumes, I thought it worth while to give considerable space to the matter.

The conclusion emerges, as might be expected, that psychological problems of economics are at present to be attacked more effectively by the ordinary methods of economic science, which consists of statistical analysis of the behavior-data relevant to the case, than by means of psychological principles; for psychologists are making progress in understanding other types of behavior by similar statistical analysis. But apparently in every field of discovery the collection of facts will be the more enlightening, the more solidly grounded the collector is in first principles. I think economic psychology is no exception, and it is my hope that this volume will contribute something to the wider understanding of the needed fundamentals.

Grateful acknowledgment is made of help received from scholars at Harvard, especially Professors Taussig, Carver, and Bullock, on the economic side, and Professors Holt and Perry on the psychological side. I cannot indicate how much I prize Professor Taussig's inspiration, counsel and encouragement. Among my colleagues at the University of Minnesota I must thank Professors R. M. Elliott, Mabel Fernald, and F. B. Garver, not only for reading the manuscript but for a large measure of suggestions and encouragement.

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For men have entered into a desire of learning and knowledge, sometimes upon a natural curiosity and inquisitive appetite: sometimes to entertain their minds with variety and delight; sometimes for ornament and reputation; and sometimes to enable them to victory of wit and contradiction; and most times for lucre and profession; and seldom sincerely to give a true account of their gift of reason, to the benefit and use of men: as if there were sought in knowledge a couch whereupon to rest a searching and restless spirit; or a tarrasse, for a wandering and variable mind to walk up and down with a fair prospect; or a tower of state, for a proud mind to raise itself upon; or a fort or commanding ground, for strife and contention; or a shop, for profit or sale; and not a rich storehouse, for the glory of the Creator and the relief of man's estate.

BACON: *Advancement of Learning, Bk. I.*

PART I

INTRODUCTION AND HISTORICAL APPROACH

CHAPTER I

HUMAN NATURE IN ECONOMICS

Mental and Physical Foundations

The object of this essay is to continue and bring down to date the old discussion of the constitution of human nature. While we are interested primarily in that part of the discussion which has significance for economics, yet it seems possible that our analysis may be helpful to a wider circle than just the economists. For when the present writer set himself to investigate the specifically *economic* motives, he found so little agreement on the fundamentals of social psychology involved that a reëxamination of these fundamentals appeared to be necessary, and such a restatement constitutes the greater part of the essay. That these foundations are of considerable importance for psychology, ethics, and social science and art generally has been shown especially in the last decade, by the enthusiastic reception accorded to McDougall's Social Psychology.

In what connections are questions of human nature important for economics? This question must be answered at the outset, for there are many economists who believe that economics has little to gain from psychological importations. And, in indicating where psychological assumptions (whether accurate or inaccurate) are actually employed in this science, we can incidentally suggest some of the other social problems which involve exactly the same questions of human nature.

Logically the first step toward explaining the economic world is to explain the *wants* which broadly determine what goods shall be produced. There are, to be sure, other motives in production too; the want of poor John Jones for street-car service does not move the productive resources nearly so much as does rich Tom Trout's demand for transportation by limousine. But in a larger view the wants of consumers for moving-picture amusement cause men and money to turn out celluloid and studios, and other wants give rise to other industries. Hence many economic writers begin their treatises with this topic of Wants. It is closely related to the subject of Consumption of Wealth; the outstanding problem of both being to find why people want just what they do today — Teddy bears, or admission to professional baseball games, for example — and turn up their noses at things they wanted a year or a century ago, — say babies' cradles or detachable cuffs. Such an inquiry into the nature and natural history of economic wants soon pushes the student back to the psychological entities of instincts, ideas, association or what not, — questions of human nature.

Let us recognize at once that an economic treatment of consumption includes much matter which is in no wise psychological, for it goes on to show what are the long-run effects of wants (for necessities, luxuries and so forth) on the people who are actuated by them. It is one thing to show *why people wish* to act so and so, — to save part of their income, for example, or to live it all up as they go. It is another thing, and quite independent of their wishes, to show *what happens to them as a result* of their acts, in each case. This is one illustration of the general truth that the foundations of economics are only partially in human nature; they are also laid in the external world which goes its way whether we like it or not.[1]

It is materials of the latter nature which are chiefly used in the traditional sections on Production and Exchange. As John Stuart Mill put it (perhaps too strongly), the economic principles in these divisions "have nothing optional about them," they are but elaborations of the data of physics, geology and biology. The advantages of division of labor, for instance, and of capital equipment (tools and machinery); the 'diminishing returns' of agricultural produce per unit of capital and labor, as soil is more intensively cultivated; the economies of large-scale production through diminishing quota of overhead expense to the unit of output ('increasing returns'); the dependence of prices on quantity of money; — these are among the more important orthodox economic laws which apparently can be little affected by changes in the winds of psychological doctrine.

---

[1] 'Psychological' and 'physical' causes are presumably not ultimately different in nature. The qualification psychological as herein used means only that a human reaction or mental act is directly involved. It is doubtless true that one's motives, beliefs, tendencies or whatever the human springs of action be called, receive all their qualities ultimately from physical nature, partly by way of the molding effect of his environment (physical and social) and partly by way of natural selection or similar influences on his ancestors.

Nevertheless there are psychological problems even in these sections. Adam Smith raised one when he attempted to explain how division of labor had originally come about.

> This division of labour, from which so many advantages are derived, is not originally the effect of any human wisdom, which foresees and intends that general opulence to which it gives occasion. It is the necessary, though very slow and gradual consequence of a certain propensity in human nature which has in view no such extensive utility; the propensity to truck, barter, and exchange one thing for another.[1]

Of course Smith was a psychologist — an uncommonly good one — and it might be said that he dragged these observations into his economics unnecessarily. What do we care how it all came about? Possibly nothing; but on the solution of a closely related problem may hang life or death, comfort or misery, for millions of people in the future. This problem is the part played by human nature in improvements of the arts, — in mechanical or other invention. We all talk glibly of the wonderful 'labor-saving machinery' which is still to come forth, but how can we best assure that it will come? Does 'capitalism,' independent enterprise, patent monopoly, public or private research agencies, or some other means, best promote such advances? Economics can assist in answering questions like these only in proportion to its achievement of an increasingly accurate explanation of production, including the motives of inventors and other producers.[2]

Another portentous psychological issue raised in the study of production is this: What effect has the minute subdivision of tasks on the mental health and happiness of the humble worker? Many observers think, as Mill did at one time, that the monotony and fatigue attributable to machinery offsets its advantage in productiveness. Again the economist may say that this is a sociological or ethical or medical question, and so is beyond his province. Undoubtedly many of the special investigations necessary for answering the question are beyond his technique, but even if he refrains entirely from pronouncements on economic welfare (few economists do so refrain), such effects on the worker should be considered so far as they reduce his economic productivity.

---

[1] Wealth of Nations (1776), Book I, ch. ii.

[2] Cf. L. Wolman, "The Theory of Production," Am. Ec. Rev. Supplement for March, 1921.

Value is the central problem of economics. Production follows values, even if these are expressed by ballots instead of by purchases; and Distribution into Rent, Interest, Wages and Profits is merely a matter of the value of land, loans and kinds of labor. As Mill saw, psychological and social factors are especially important in this division. The individual's evaluation of alternative purchases seems preëminently a mental act, a matter of choosing or deciding how many apples or doughnuts he wants just as much as he wants a dime, — how many A are just as valuable to him as B. This individual subjective process is studied by economists principally for the purpose of explaining the fluctuations of market exchange values, that is, to ascertain as completely as possible why a bushel of wheat, say, becomes exchangeable for two chickens now, whereas a year ago it would buy but one.

The older economists — Ricardo conspicuously — maintained a labor theory of value, to the effect that things exchange, on the whole, in proportion to the labor-times required in their production. This theory proved so inexact as to be nearly worthless except to the Socialists for propaganda; and the supplementary marginal utility theory of Gossen, Menger and Jevons (1871) is one of the great triumphs of economic science. The latter states that goods are not valued because they have cost labor, — for example, land and many other objects which are gifts of nature are valuable, simply because they are so scarce as not to satisfy all wants for them; but labor is valuable because of the goods it is the means toward getting. The key to value, then, is in wants and in the way that any one of them becomes progressively 'saturated' as successive units of the same good are possessed (diminishing utility). We are not attempting a discourse on value here, our point is that economic discussions of value have become much occupied with this psychology of wants and of choice; so much so that a large group of economists who specialize on the subject of value are called the "Psychological School."

Beyond this branch of the general theory of value, the lore of motives looms large in discussions of the special values of capital and labor; or let us rather say in respect to matters of public policy based on these branches of the theory. The economic distinction between interest and rent is chiefly a matter of motives, in that the supply of capital (savings out of which new buildings, machinery, etc., can be provided) appears to be kept up only on condition that interest is paid to savers; whereas the amount of land is practically a fixed quantity regardless of whether private property is permitted in it and rent paid to the owners. It seems even clearer that labor will not be forthcoming unless wages are to be paid for it, and that if the employer is to take the chief risks of loss in carrying on production, he must be induced to do so by prospects of possible profits.

But of late years it has become orthodox economic doctrine that there are ' rents ' in interest, wages and profits, as well as in the rent of land. What is the distinguishing feature of this common element? It is the amount which the capitalist or laborer can get for his service (at the market rate which is uniform for all like services), which is in excess of the least he would be willing to sell it for if he could not get more. Much of the interest paid on the accumulations both of the poor and of the rich is of this character; the poor save for a rainy day, and the rich save from force of habit, — in either case the amount of principal saved would be about the same if interest were half or a quarter what it is. In the same way there are numerous men of talent in business, in the professions or in art, who would do just as good work if the market value of their services happened to be half or a hundredth what it is. Caruso presumably would have caroled just as melodiously if the riches of America had not existed and he could sing only to his poorer countrymen in Italy. The fortunate possessor of talent or capital often gets the same kind of lucky 'rent,' therefore, as does the owner of a farm on which oil is discovered. And a great part of the significance of distribution theory depends on the assumptions as to producers' motives with which you start.

Here again, however, the economist must have his eye on some external necessities which are not psychological, and cannot be changed by wishing. One of the chief of these is the principle of Proportionality, or 'diminishing productivity,' out of which the famous 'specific productivity' theory of distribution was formulated by Clark. For the production of any consumable good numerous ingredients are necessary, including different kinds of labor. The proportion in which these ingredients may be used is usually not fixed; one may farm with much land and little capital and labor, or with much capital (tools) relatively to the others, or with varying proportions of skilled to unskilled men, and so on. By successively increasing the use of any one ingredient, all others remaining the same, the total product will be increased for a time at each step, but at a diminishing rate. Finally more land or machinery or one kind of labor will not result in any increase at all. Hence if the farmer is to be induced to buy anything which he already has in abundance (relatively to the factors with which he must combine it), this article must be offered him at a lower and lower price, until finally he will give nothing at all for more of it. It will be superabundant, as water is to some farmers, or apples rotting on the trees. In these circumstances, whatever water or apples or land he can use are physically just as necessary as any other ingredient in his process, and just as meritorious from a moral point of view, but it is impossible to conceive of his going into the market outside and buying more of them, for more would be of no use to him. He would spend his money on the scarcer elements, which would mean an increase in his final product. We must look for a strain of this policy to run through his acts, even though he makes mistakes in detail, and we assume he will always have his eye on the largest profit, which represents goods that consumers most want. (This assumption, however, is getting back to psychologizing.) So that all values of producers' goods, including the value of a given kind of labor, are governed by technical conditions quite as much as by the whims of the buyers; which is a more accurate way of saying that value depends on supply and demand.

If the value of common labor or of school teachers is low, therefore, we must inquire how the supply of it got out of proportion to the more highly paid labor which is required in conjunction with it. We are thus presently led into the subject of Population, and the Malthusian discussion. The older economists prophesied, from what they saw of the facts of animal fertility, that wages must always remain near the minimum of subsistence, since if more were secured, population could increase until wages were brought down again. That was the purport of Ricardo's Iron Law of Wages. But the declining birth rates in all civilized countries over the past fifty years, with France's population now nearly stationary — and in the face of a considerably higher level of real wages than the preceding century knew — has called attention to the psychological factors of the Standard of Living and Birth Control, which must be studied in relation to the theory of wages.

PRACTICAL USES OF KNOWLEDGE OF MOTIVES

So much for the more important psychological issues of economic theory. Though it is hard for most readers to avoid being deceived, by the abstract language of science, into thinking of these as mere 'academic questions,' we must, in the interests of economy of space, forbear to trace their emergence into such practical issues as tax systems, poor laws, trade policies, public regulations on business, state ownership of railroads or other means of production, and the whole general issue of collectivism *vs.* individualism. Taussig, discussing Socialism, says:

> The questions between private property and socialism are thus at bottom questions as to men's character, motives, ideals. They are questions, in so far, of psychology; in more familiar language, of human nature. They are not simple, but highly complex; because human nature is highly complex.[1]

His two chapters on this subject would perhaps be the best introduction to our study, especially since they inspired the present writer to undertake it. In politics, education, ethics — in the study of human affairs generally — the larger problems are still those questions of human nature with which Plato and his predecessors grappled: what is constant, what is variable and how is it variable, in man's mental endowment? Why do men fight? has been the stumbling block of schemes for international organization throughout the centuries, and of many other projects of brotherly love. Are some children innately more ' worth ' educating than others? At least, how may education and industry be best adjusted to their (supposedly) different natural capacities? Two branches of business psychology, having large money-making potentialities, also depend on these same fundamentals, — we refer to advertising and employment psychology.

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[1] Principles of Economics, Ch. 65, sec. 6. Compare the excellent discussion, in the same spirit, in A. Wagner, Grundlegung der polit. Ökonomie, 3d ed. (1892), pp. 72 ff.

Considering, then, the import which the obscure laws of human nature have for all our social institutions and even for private prosperity, we may condone somewhat the unbalanced exploitations of alleged discoveries in psychology which we see about us every day; and, realizing that it is hopeless to expect to answer most of the questions we have raised, do what we can toward fitting together whatever fragments can be found of the master key that will fit all these locks.

Now the objection may be raised by others than economists — and it is sure to be raised by many of the latter — that while all we have said may be true, there is still no evidence that economists have anything to gain from excursions into psychology. They (the economists) often speak of ' *the* economic motive,' meaning the general desire for more wealth, as distinguished from the motives of family, conscience, and so on, and then say that economics seeks only propositions which follow from this one powerful force (comparable, say, to gravitation), without denying that there are ' disturbing,' unbusiness-like motives, which make economic life in detail a little different from what it would be if all people were actually moved only by the desire to make money. Such was, theoretically, the position of leaders like Senior, Mill and Bagehot. It seems obvious that in modern business, at least, the most important single key to men's doings is search for the greatest gain; and so economics, the science of business, may take this motive for granted, and leave to speculative dreamers the task of philosophizing over what men want money for. And similarly the practical man may say that the principle of self-interest — 'people are out for all they can get' — is a good enough key to human affairs for him.

The economists of an earlier day deliberately connected their theory on this point with the doctrine of motives generally believed by philosophers of the time, called Psychological Hedonism. This doctrine avers that all men act cannily to secure the greatest possible pleasure or, what was supposed to come to the same thing, the most complete exemption from pain. Any person was supposed, that is, before willing any action, to make a quick calculation of the probable results in pleasure or pain to himself of each of the possible courses he might take, and then to choose and carry out that course which promises the largest hedonic results. So that the philosopher-economists no less than the business-men-economists of the time, found it easy to assume that the pursuit of 'utility,' 'pleasure,' 'wealth,' all mean about the same thing, and all are carried on rationally, calculatingly, by mankind in general.

Everyone will see, however, if he stops to think, that theory on this simple premise of motivation is but a rough approximation, and often badly misleading in practice.

Many of us are willing enough to believe that certain socialistic leaders are actuated only by gain-seeking, but we protest vigorously against their 'economic determinism' so far as it means that *we* are fighting merely to hang onto our 'privileges' and are 'exploiting' every other human being so far as we possibly can. When the nation is in danger, or some catastrophe has made thousands hungry or homeless, do we think it vain to appeal to other than mercenary motives? It is only by a shrewd knowledge of the human springs of action which will cause large numbers to act against their economic advantage, that such enterprises can be carried on. War and extraordinary distress are not the typical situations, is the reply usually given by economists. What people will do in such times they will not do in ordinary business. That is true, but are we so sure of what human nature is ultimately capable, in ordinary business? Is it so certain that patriotism cannot some day be invoked by everyday tasks?

And even at the level of everyday business life, there are many observers who contend that economic self-interest by no means furnishes the main clue to men's actions. A certain large department store, for example, allows none of its buyers or other representatives to travel on Sunday, and since but few outsiders are aware of this rather expensive policy, it cannot be attributed to clever advertising. Many other examples of conscientious scruples thwarting the motive of gain might easily be collected. Or consider the case of powerful daily newspapers, having lists of the proprietor's personal enemies who are not on any account to be mentioned favorably. A certain highly successful motor-car manufacturer is reported to be implementing his vast business organization in a bitter anti-semitic campaign upon which he became launched apparently by personal associations. Consulting experts in business organization testify that practically every large concern they enter is honeycombed with prejudices, jealousies and cliques which must be analyzed and taken account of before purely efficiency measures can be suggested. Labor conciliators say that pride, resentment, the itch for power, are often more important in disputes than the dollars and cents at stake.

On the other hand, instances may be multiplied in which business men have learned to increase their profits by analyzing out some of the ' human nature ' quirks of the people they deal with.[1] The salesman long ago found the theory of one economic motive, self-interest, too simple for his purposes, and so he turned to psychological inquiry to discover how he might persuade people to buy his article at a higher price rather than a competing article just as good for a lower price. The employer is just beginning to find that his labor problems do not turn entirely on wages, and is developing incentives such as pride in the business, approbation for good work, or a variety of tasks for each worker.

Considerations like these have tended to discredit the old hedonist psychology, and have raised a host of critics in the economic world against many points of economic doctrine which they consider based on an ' exploded ' psychology. These attacks are often met by the statement that economics takes as premises only what men are seen to do, and consequently is not involved in psychological disputes as to *why* they act.[1]

---

[1] See, for instance, Fred C. Kelley, Business Profits and Human Nature.

As will appear in Part III of the present work, we consider that there is a large field in economics for which the reply just noticed is valid; in which the economist need no more worry about the ultimate facts of the spiritual nature of man than the carpenter concerns himself about the higher chemistry of wood. At the same time, as we have attempted above to show, economic explanation, even as it is most narrowly conceived, does bristle with premises that are really psychological, in which it is a question of fact whether the hedonist assumption or some quite different version is true, and on the answer to which the accuracy of the economic principle depends. Some of these are narrow and specific questions, such as, How far do the facts of industry bear out the marginal utility theory of value? — while others are vague and general, like Is self-interest ineradicable?

In general it may be said that increased accuracy in explanation of the processes of human behavior will bring forth more effective practical control in all the social fields, just as the art of medicine is continually improved by physiological research, or the arts of engineering and carpentry by physical research; but this is possible only on the condition that some one carries the results of the pure sciences which are relevant, over to the practical fields in such form that they may be of use.

PSYCHOLOGY AND ECONOMICS BOTH 'BEHAVIORIST' SCIENCES

One more scruple of the economist may be noticed. He is perhaps doubtful if psychology has really been working on problems that are relevant to economics. We venture to say there are much closer relations between the methods and subject-matter of the two sciences than is usually realized.

---

[1] See "The Relations of Recent Psychological Developments to Economic Theory," by the present writer, in Quar. Jour. Econ., May, 1919, for a fuller and more technical examination of this controversy. It is because of this long dispute that we give so much attention below to the subject of hedonism and ' rationality.' The subject is a crucial one, however, in other connections than economic, — especially in political theory. See, for example, G. Wallas, Human Nature in Politics and The Great Society.

In the first place, the human *want* is a central unit for both sciences; one might almost say that both are built around it. The economist observes that people want to possess and consume certain objects such as food, or services such as barbering, and that these wants drive them into the activities of production. Conversely, production and value are definable in terms of wants, rather than of any special type of mechanical performance. Economic wants, we may say, are easily inferred from what men *do*, and economics as a science deals with the activities of men toward satisfying such desires.

What is the psychologist's business with wants? He uses the term *response* or motive to designate an entity which is essentially the same as that we call ' want '; and he points out that any response involves three elements (besides the living organism who is its subject): The stimulus, or outer object upon which this response hinges, the mode of response, or what the organism does when the stimulus is presented, and the neuro-muscular mechanism, by which such behavior is elicited. A response, the psychologist is now careful to point out, is not to be thought of merely as an activity; it may exist merely as *potential* behavior which the mechanism is set to execute whenever the stimulus shall appear. Thus it becomes clear that this ' response ' is our ' want.' And psychology tries to explain the general principles of response, by observing all three of these elements.[1]

The economist, therefore, is a psychologist in spite of himself, engaged in explaining a special type of behavior, with his eye on the stimuli (wealth, and the various other features of the environment), and on the behavior they elicit from his subjects. It is questionable only if he may derive anything from consideration of the physiological mechanisms involved. Psychologists will testify, however, that their science has made most progress toward explaining the relations between stimuli and behavior since it has given attention to this minute machinery; and correspondingly, reasons will become apparent as we proceed why a minimum of familiarity with these remote processes will promote better understanding of the larger behavior by the social scientist too.

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[1] See E. B. Holt, The Freudian Wish (1915), for a readable psychological exposition along this line. The reader may not be able to harmonize our account with the psychology of sensations, feelings, consciousness, which he has perhaps cultivated, but the substantial identity of the two will be brought out in the following chapters. Briefly it may be said that sensation generally parallels response, so that the same phenomenon may be viewed either subjectively, as what the subject 'feels,' 'thinks,' etc., or objectively (from the ' behaviorist ' standpoint), as what he ' does.' As Woodworth points out (Dynamic Psychology (1918), pp. 34, 35), the business of psychology has always been to investigate the ' workings of the mind,' so as to learn how people come to feel and *act* as they do.

CHAPTER II

COMMON-SENSE ANALYSIS OF MOTIVES

Sources of Material

We have indicated in a general way how the psychological analysis of human motives may be of use to the social sciences, in particular to economics. We now enter upon such an analysis, in the hope of making a little progress on the old questions: What are the hidden springs which cause people to work and play, to save and spend, and otherwise to behave as they do? According to what principles, if any, do their motives grow and decay? Not only the questions themselves, but most of the answers still offered to them are as old as tradition. They have been discussed by wise men in every age, and so our first puzzle is concerning the selection of material.

Since people have always had a deep interest in their own motives, and especially in the motives of their fellowmen (knowing that a man's conduct depends on what is in his heart), we find shrewd observations on character and on the leading ' passions ' of human nature scattered throughout the whole of recorded literature. These observations show impressively how little the leading complexes of motives have changed since men began to write down their thoughts. One wonders if a year has passed since Plato wrote his Republic, in which some reader has not exclaimed "That might have been written only yesterday!" John Stuart Mill, in outlining the science of character or ' Ethology,' considered these ' empirical' observations indispensable for such a science.[1] A British psychologist recently writing on the subject has adopted Mill's plan,[2] and turned to the poets for classic information. History and biography of course are full of evidence on motives; Taussig used such testimony effectively in discussing the psychology of the inventor. One always turns to a Napoleon or Socrates for an example of human incentives working out in a large way.

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[1] Logic, Book VI, chs. iii and v.

[2] A. F. Shand, Foundations of Character (1914).

In the old maxims and theorizings, however, there are many contradictions and especially many half-truths, while in personal reminiscences there is the coloring of prejudice and apology; so that the importance of Mill's second specification for an ethology becomes apparent: the empirical observations must be checked up by the 'laws of mind,' — that is, by the science of psychology. The latter's method is empirical too, but its empiricism is under controlled, standardized, repeatable conditions.

The general subject of motives has received its fullest treatment in the past, however, at the hands of moralists. From Socrates and Plato down to Sidgwick and Green, these authorities, who were usually also political theorists, have been formulating explicit theories of human nature to serve as foundations for their various ethical and political doctrines. We summarize some of these old formulations in our next two chapters, partly on account of their historical connection with economic theory, and partly because the older philosophers were among the keenest observers of men, and their answers to the fundamental questions give us a good introduction to our subject as well as a condensed picture of the human nature they saw about them. The ethical writers, however, are apt to be biased in their psychology by their metaphysical preconceptions; and it is only in the last fifty years, that there has split off from ethics a treatment of human motives in which the dominant interest is what actually does make men act, rather than how they should act. The Mills, Bain and James, for instance, were scientific psychologists as well as moralists. McDougall, in his Social Psychology (1908), complained that professional psychologists had left the study of the human springs of action to ethical writers until this province was "the most backward department in psychology." As we shall see in a moment, a complete theory of action, or of motives, requires a complete psychology, so that there was some excuse for the backward condition he lamented. Nevertheless it was high time for one of the craft to gather up what was known on the subject, and especially to put it into such form as is useful to the social sciences.

McDougall has therefore earned the gratitude of every student of these disciplines. It is questionable if there is not more of the whole truth in William James than in McDougall, but James' catholicity, which makes him such a fertile source of suggestions today, made him entertain a large number of contradictory doctrines, while McDougall, if one-sided, is consistent.

In the present analysis we are obliged to neglect the older and wider sources of material just mentioned (except classical moralists considered in the next two chapters), because the scientific psychological work of the last thirty or forty years is so voluminous that we shall be able to use only a small part of it, and because its methods seem to promise the most help in the future. The maxims of shrewd, ancient common sense are always sufficient for many purposes, but the more careful, repeated, quantitative observations of isolated parts of the phenomena, which characterize scientific method, usually give us in the end still larger control over nature. The old bridges and canals, the housewife's primitive hygienic practices, the farmer's or seaman's skill in forecasting the weather, all owe little or nothing to science in the modern sense; but we have had better bridges and medicine since the conditions have been studied scientifically, and we hope therefore that some day we shall be able better to predict the weather and also human responses to given stimuli, by reason of the minute and fragmentary researches of the specialists.[1] Yet as our conclusions will indicate, psychology is still so far from supplying adequate answers to the large questions of human nature which we have raised, particularly as to the relative strength of motives, or the exact contributions of instinct and experience, that for most purposes of social art the data of the other social sciences, and the wisdom of men of affairs are as yet the best guide to be had. What we may draw from psychology now is mainly in the nature of suggestive hypotheses for further investigation.

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[1] Graham Wallas, in Human Nature in Politics, Pt. I, ch. v, shows the advantages of the quantitative character of modern social knowledge. It is usually more helpful to show in what proportions certain things are desirable or in existence than simply that they are needed or do exist. Mr. Wallas cites the equilibrium curves of economics as an example of this quantitative scientific method.

FUNDAMENTALS OF ALL MOTIVES NEEDED

Since we have just been speaking of the human motives in a very general, inclusive way, we may be reproached at once for wandering into fields irrelevant to *economic* motives. The desires with which the sages and moralists have to deal are of one kind, we may be told, but those of interest to the economist are another. The ' desire for wealth ' is often spoken of as *the* economic motive. But does it appear that there is any human incentive which may not at times give rise to economic activity? The desire for wealth is not an elementary desire; it is a compound including at various times the love of family, the desire for esteem by one's fellows, the hunger for creature comforts and for objects of beauty, and very likely numerous others. A man's wants for economic goods and his consequent responses to the bribe of wealth, are always sophisticated, they are the joint product of his native instincts and sensibilities, and of his material and social environment. Differences in these factors, which include moral, religious and esthetic suggestions, make the missionary's desire for wealth of quite another hue than the worldling's, and the indolent savage's economic motives remote from those of the apostle of industrial progress. Finally, there are motives which cannot be included in the desire for wealth, which are still economic, such as the creative bent or ' instinct of workmanship,' the fear of corporal punishment, and the desire for social approval of one's *efforts*, as distinguished from approval of his *acquisition*.[1] We must, therefore, investigate as best we can the fundamentals of the whole theory of action, although a complete theory of action would mean a complete and perfect psychology.

What are the fundamental factors which determine our behavior? If we examine more closely the common-sense doctrine of psychological hedonism, we shall get some suggestions as to how the search must proceed.

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[1] Compare Fetter, Principles of Economics (1905), p. 14: "whatever motive in man's complex nature makes him desire things more or less, becomes for the time, and in so far, an economic motive." E. g., he points out, a religious attitude toward fish affects the fish market.

The explanation that people usually act to secure pleasure and to avoid pain has always suggested itself spontaneously whenever the inquiry as to the natural grounds of action was raised. The general conformity of this view with the facts of experience is so marked that it need only be stated to win the assent of a person not already corrupted by philosophy. And so there have been bold generalizers throughout all ages who asserted not only that people *generally* act for the sake of hedonic consequences but that *always* they do. "Nature has placed mankind under two sovereign masters, pain and pleasure," as Bentham said. As we have already observed, objectors then come forward with many examples of conduct which is not actuated by the prospect of pleasant consequences to the agent, and ask the hedonists what they are going to do about these. The object of one's action may be the advancement of another person's happiness or the realization of an abstract ideal, and it may be at the cost of the agent's own happiness (or pleasure); or the act may be due to nothing more than unreflecting habit; or perhaps it was just upon an impulse of which the agent could give no account except that he had to obey it.

Then the hedonist is likely to twist his argument into another form. The *future* pleasure of the agent is not what motivates him, perhaps, but that course of action is chosen which is most agreeable *for the moment.* The consequences may prove thoroughly disagreeable to him, but his action is nevertheless in the line of least resistance. Howard spent an apparently miserable life devoted to prison reform; that however was the life he found it pleasant to choose.

Both hedonistic theories at this stage are reasoning in a circle: A man does that which is pleasant to him, either in the willing or in the consequences. And what is pleasant to him? That which he does. There is no independent entity, in terms of which both 'pleasure' and 'will' may be explained. The opponents of hedonism likewise must exhibit indisputably simpler determinants of action, not related to pleasure and pain, in order to advance the discussion. How comes about the attachment of 'self-realization' desire to certain lines of conduct? Whence comes the existence and power of ‘ ideas ’ which successfully oppose pleasure and pain, according to the ‘ ideomotor ’ theories? And so on.

Can we say, then, that the hedonistic explanation of motives which the Bentham school popularized was no explanation at all but a mere circular reasoning? By no means. For they exhibited an element of pleasure simpler than that of any concrete action, namely, the pleasure of the simple bodily sensation.[1] Assuming this element and the principle of ‘association of ideas,’ whose far-reaching effects were just beginning to be appreciated, they taught that all motives, however unsensuous in their full bloom they may seem to be, are really produced by associations of pleasant or painful sensations in the agent's own personal experience. The force of association is so powerful between mental states (ideas) which are experienced close together in time, that pleasure comes to be felt in a pursuit of an object originally indifferent to the agent, simply because he has experienced it a number of times in association with some other event that was intrinsically pleasant. And contrariwise originally pleasant associations may fix a habit so firmly that it will move the agent after the pleasant associations have disappeared.

It may be, of course, that all motives cannot be fitted into such a simple formula, but at least the psychological hedonism of the Utilitarians, which attempts to analyze complex motives into the feeling-tone of simple sensations, by means of the principle of association, proposes an analysis which is highly valuable if it is accurate. It makes the elementary motives much fewer than can be discovered by adult introspection, and it offers almost unlimited possibilities for social control through artificial association,—that is to say, through education. If the analysis is not universally true, perhaps it may be valid within a limited sphere, and in so far useful. We shall find, in fact, this question of the rôle of pleasure and pain as determinants of human behavior running like a thread through all psychological discussions of the springs of action; and it will appear that a completely satisfactory explanation of the facts has never been found. There is also the related problem of the emotions, with their characteristic bodily expressions; they have long been believed potent movers to action.

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[1] Even this conception is not so unambiguous as it seems, as will appear when we consider pain and pleasure, pleasantness and unpleasantness, more in detail. The sensation of pain is sometimes pleasant. But it is fairly accurate to say that the simple sensations are either pleasant, painful (unpleasant) or indifferent. It is more doubtful if all states of feeling are thus accounted for by the tones of elementary sensations, but for the present let us assume that all kinds of pleasures have the same general effect on action, and that all classes of unpleasantness or pain have the opposite general effect.

Beside the pains and pleasures of sensation, there are several other mental entities which have always been staple articles in the theory of motives. Men certainly do not always act for the sake of *immediate* pleasures, and moreover they have knowledge which seems distinct from feeling, and which frequently influences their conduct by considerations of future interests causing the sacrifice of present pleasure for the sake of future gains. And so we have to deal with the intellect, or cognition, or the special part of it called ' the reason.' The qualities of sensation (such as light, sound or touch, considered apart from their agreeableness or disagreeableness) give us immediate knowledge of the world about us, and somehow through the reason we infer from the immediately given sense-data, knowledge regarding objects remote in space and time. So that the reason mitigates the ' impulses,' in some sense, by foresight of remote consequences, desirable and undesirable. This much and more we find in Aristotle's theory of motives.

Almost as ancient as the concepts of pleasure or desire and the reason are those of instincts and habits. Both of these names refer to definite courses of action which tend spontaneously, mechanically, to be performed whenever the agent is in a given external situation. The difference between them is that an instinct is supposed to be hereditary while a habit is acquired through individual experience. Here are two more candidates, besides pain, pleasure and emotions, for the rôle of motive.

There are also numerous puzzling overlappings among the foregoing elements. Instinctive and habitual actions are usually in some degree pleasant or painful; hence the theorist, if he is so disposed, can assimilate them to pleasure and pain. Instincts can be distinguished from habits only with the greatest difficulty, because of the helplessness of the infant and the unknown possibilities of the learning process; so that the theorist may deny the existence of any human instincts. Yet there are facts of animal life which make the possibility of an inheritable untaught ability evident even to crude observation. Consequently, throughout the ages our authorities have argued (or assumed) that if the ability to suck and cry can be innate, why may we not suppose that other abilities, such as to believe in the external world, to perceive space and time, to distinguish between right and wrong, are also innate and God-given? The hypothesis of instinct is thus an exceedingly natural and convenient one. The 'passions of the soul,' such as avarice or ambition, have always been regarded as dominant and universal human motives, sustained by pleasurable emotional excitement, so that in the absence of exact knowledge they could be regarded as either instincts, pleasures, or emotions.

The 'will' was frequently regarded in the older days as another element in action if not in motives, because it was considered a ghostly power, seated in the heart or skull, which could give commands without regard to the agent's desires or past experiences. There has always been a strong disposition, on the other hand, to consider the will merely as a stable organization of motives somewhat equivalent to 'character.'

Some Issues Depending on Nature of Instincts

Thus the important factors determining action are the jostling impulses — desires or instincts or habits or whatever else they may be — and the reason or intellect sitting as arbitrator over them. Our task is to learn as much as we can about the nature and means of interaction of them all. We must get the instincts as well earmarked and described as possible, for upon their nature depends many of the grave questions noticed in the previous chapter. Revolutionists have always inclined to believe that the 'natural man' is a good-hearted, sociable fellow, that our instincts naturally lead us to harmonious and happy lives, and that society (or rather its rulers the kings, priests and aristocracy) have instituted certain conspiracies of law, marriage, and inequality of wealth and luxury, which oppress many of us into rebellion. The more hard-headed (or perhaps hard-hearted) observers, such as Aristotle, Hobbes, Malthus, say No; the instincts of sex, pugnacity, rivalry, and of natural indolence, in a state of anarchy would make men's lives supremely miserable by incessant quarrels. It is necessary, therefore, to have social institutions which balk these inordinate tendencies, by pitting against them others which are more powerful when aroused, but which in a state of nature are aroused only after the mischief by the first instincts has been done. The prudential instincts are fear, self-preservation, the love of luxury, and perhaps others. They are to be opposed against the rash impulses by means of the reason, which foretells the long-run consequences and which can be strengthened through education, — that is, made a more and more perfect forecaster. Some of the most important questions in economic theory, such as private property, competition and theories of distribution, as we have seen in Chapter I, are bound up with theory concerning these relations of instinct and reason.

In spite of the best artificial sanctions and education which society has been able so far to provide, men have always been prone to rash, imprudent, illegal and sinful acts, and so a third standpoint has for some time been common. Its view is that, although the original instincts are not harmonious, yet they are ineradicable and stubborn, and can never be completely subdued to moral or prudent levels by mere social threats of painful consequences. Men are by nature able to be "only a little bit reasonable," their idleness or vice is not to be successfully combated by distant prospects of poverty or punishment, for they are animals with only imperfect control over their impulses. Therefore much of society's proceedings on the assumption of complete human responsibility has been as ineffective as punishment of the insane.[1] In this view the instincts are not to be held inviolable, but are to be circumvented in accordance with a better knowledge of their nature just as we circumvent physical obstacles and do not merely treat them with contempt.

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[1] Cf. W. E. Hocking, Human Nature and Its Remaking (1918), pp. 5, 6: "It is only as a result of much failure in the effort to remake men that the question of possibility gains a status and a hearing. It is this same experience which suggests that there is such a thing as 'human nature,' offering a more or less constant resistance to the remaking process."

ALL OF PSYCHOLOGY INVOLVED

The partial mechanisms of action, then — instinct, habit, passion, the reason — are what we must examine. But let it be noticed that the whole of psychology is frequently classified under the headings Cognition, Feeling (Pleasure-pain and Emotion) and Conation (or Volition). All these functions, as we have seen, are involved in the motives to action, and therefore the last word will be said on motives when the last word is written on psychology. In the first chapter we intimated that the only discoveries in psychology which would affect economic theory would be those adding importantly to our knowledge of motives, but the fact is that hardly any psychological investigation does not have some bearing on this problem. The conditions of feeling and emotion make up a very large and uncertain subject by themselves, and the coöperation with them of what we call the intellect or reason to form the will, make another library. One might devote a lifetime to a scientific study of the conscience, or the sense of duty, which is an acknowledged influence on action. The laws of association received the labors of a number of the older psychologists; but they are now undergoing treatment at the hand of a large corps of experimenters in laboratories. The psychopathic clinics are being resorted to by another large group of students for insight into the mechanism of motives. The various reaction-time, discrimination and memory experiments, and especially the work on attention, all have some bearing on action, and a dozen or so psychological journals are steadily setting forth detailed results of researches which are raw materials for such generalizations as this study aspires to be. The vast complexity of the subject, therefore, must extenuate the tentative and obviously inconclusive character of the present account.

CHAPTER III

ASSOCIATIONIST-HEDONISM: ARISTOTLE, HOBBES

Object of Historical Sketch

Doubtless there are many who believe, with Professor Patten, that McDougall's treatment of motives made "such a radical reconstruction that a discussion of the older views becomes a waste of time."[1] For our special purposes, however, it seems worth while to trace once more, and briefly, the historical development of the associationist-hedonist theory of action. It would be entirely possible to plunge immediately into modern psychological evidence, which is, in general, of greater value in proportion to volume; but since the alleged psychological errors of the classical economists occupy a large place in present-day economic criticism, we shall feel surer of our ground if we satisfy ourselves just how bad that psychology was. As Bentham said in his Defence of Usury, it is hardly sufficient to show the logical or factual errors of an old established view; we are never satisfied until we know why people ever believed so ridiculous a doctrine. Conversely, we are better satisfied that old conclusions are correct if we are assured that the premises used to arrive at them were correct.

Fortunately for the purpose, we have explicit psychological writings by Adam Smith, Bentham and the two Mills, and we know that the chief economists of the eighteenth and nineteenth century were thoroughly familiar with the classical philosophers and moralists who preceded them. A review, therefore, of these important sources will enable us to understand the instructed thought of their time on human motives. As has been pointed out, moreover, the easy comprehensibility of the associationist-hedonist doctrine makes it a simplified introduction to the more refined psychological analysis of the present day, even supposing the former to be wholly false. So far as we yet know, however, it is not wholly false, for many of the questions considered by the older psychologists are among the most unsettled in the science of today; and the answers which they arrived at are still worth considering. Especially are their catalogues of the characteristic leading human motives valuable to us, in our quest of the specific human instincts which are of social significance. Every classical psychologist and moralist considered it part of his business to give a catalogue of the chief human ' passions,' and since modern psychology cannot yet assert confidently what the really hereditary interests of men are, the older estimates are still to be accounted evidence.

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[1] "The Mechanism of Mind," Annals Amer. Acad. Pol. and Soc. Sci., 71: 202–215 (1917).

ARISTOTLE

The first considerable body of doctrines on our subject is in the writings of Aristotle. A very complete and explicit theory, in fact, can be gathered from this source. "The Philosopher," as he was called throughout the Middle Ages, taught that desires for pleasure and for the avoidance of pain constitute the motive forces in all animals, including men; and that in men alone the reason mediates among those impulses which urge toward immediate satisfaction and those having future reference, so as to secure a prudent course giving future pleasures and pains their just due. A wise and long-run policy of moderation is thus possible if the man's reason is strong enough. Pleasures of philosophic contemplation should be chiefly relied on for the best long-term results. He treated of the relation of ideas to sensations very much in the manner of the modern associationists, and he stated the laws governing association much as they have been stated ever since. He did not erect the principle of association into a complete account of knowledge and the will, however, as did the utilitarian psychologists. Reason seemed to him an independent function or faculty of the soul, which discerns relations among things and argues by syllogisms. To an explicit theory of the sensational origin of all knowledge and desire, with association as the principle of their organization, he seems not to have arrived, although he came very near it.

In more detail, Aristotle's account of an idea or image, in relation to a sensation, was this:

> For an active stimulus stamps on the soul a sort of imprint of the sensation, analogous to stamping with a seal ring.[1]

The principles by which ideas cohere, or are associated, he mentions several times, most clearly in describing the process of remembering:

> When, therefore, we recollect, we awaken certain antecedent processes, and continue this until we call up that particular experience, after which the desired one is wont to appear. That is why we hunt through a series in thought, beginning with an object presently before us, or with something else, or with an object that is similar, or opposite, or contiguous. In this way, recollection is awakened. . . . For mental movements follow one another, this one after that, by habituation . . . for just as things are mutually related in their order of succession, so also are the mental processes.[2]

Here are the expressions 'similarity' and 'contiguity' which Bain, one of the last and most influential of the associationists, considered the fundamental principles of association of ideas. Aristotle's account is one of the great-ancestors of the naturalist formulation of knowledge and conduct.

In his treatise, On the Soul, he gives a pretty definite theory of the relations of pleasure, desire, and reason to all human action, and this treatment is supplemented by hints in his other works, especially the Ethics and the Rhetoric.[3] "It is always the object of desire," says Aristotle, "that excites action and this is either the good or the apparent good. . . . Evidently the psychical power which excites to action has the nature of desire as we call it."[4]

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[1] On Memory and Recollection, 450a10 (W. A. Hammond's translation, entitled Aristotle's Psychology, p. 199).

[2] *Ibid.*, 451b7, 8; 452a11; pp. 205, 206 of translation.

[3] Professor Hammond, in the translation above mentioned, gives an analysis of Aristotle's psychology, based not only on his own translation of De Anima and Parva Naturalia, but also upon the other works, especially the two versions of the Ethics and some other smaller treatises. Unaccountably his analysis of the moral will contains no references to the Rhetoric. It is evidently constructed carefully and without prejudice in the light of modern psychological theory, however, so that we have relied upon a verification of it by the accompanying translation and by translations of the Rhetoric, Politics and parts of the Ethics.

[4] De Anima 433a5, 6; p. 133.

He then identified this "power" as the "desiderative element of the soul" as distinguished from the "nutritive, sensitive, rational and deliberative" elements (the latter two, no doubt, referring to theoretical and practical reason).

Desire is specifically connected with imagination, and he is mindful that the latter is largely concocted of ideas or imprints of sensations:

> In a word, then, as we said before, an animal in so far as it is capable of desire is capable of self-movement. Desire, however, is not found apart from imagination, and all imagination is either rational or sensitive in origin, and the lower animals share in it.[1]

Now what are the things desired? Well, as we have quoted him already, "either the good or the apparent good." In a number of places he identifies the good, as seen in desire, with the pleasant.

> The acts done through desire, are such as seem pleasant . . . thus to put it shortly, all things which men do of themselves are good or apparently good; pleasant or apparently pleasant; for I reckon among goods, riddance from evils or apparent evils, and the exchange of a greater evil for a less.[2]

Again, in discussing the question of movement in the lower animals, he says:

> Is it possible for them to have imagination or desire? They appear to feel pleasure and pain, and if these are felt they must necessarily have desire also.[3]

Now as to the rôle of reason in action, he speaks sometimes of the theoretical reason and again of the practical reason, meaning that the soul functions sometimes in discriminating the true from the false, and sometimes in distinguishing the good from the bad. The 'faculty psychology' — teaching that the various mental powers such as reason and memory are seated in different parts of the body or brain — arose with Plato, but its essence was rejected by Aristotle. The soul to him was a unity residing in the heart; and its function could be classified into 'powers' or 'faculties' only from the point of view of the onlooker. The practical reason expresses itself in the form of a syllogism with an imperative conclusion. The major premise, for instance, is "A man should take exercise." Since I am a man, it follows that I should take exercise.

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[1] De Anima 433b10; p. 134.

[2] Rhetoric, Book I, ch. x (Jebb's translation).

[3] De Anima 43a1; p. 136. Also, "the fact that all animals, brute and human alike, pursue pleasure, is some presumption of its being in a sense the chief Good." — Nic. Eth., 1153b, Book VII, ch. xiii.

> So that it is reasonable to regard these two principles, viz., desire and practical reason, he says, as motor forces. . . . However, reason does not appear to produce movement independently of desire. . . . Reason, then, is in every case right, but desire and imagination may be right or wrong.[1]

We recognize here the heart of relativist ethics, — the non-moral character of single impulses, considered by themselves.

He is sometimes compelled to speak of the practical reason as a kind of appetite or desire, since obviously in some sense it struggles with desires, just as desires struggle with one another:

> Although desires arise which are opposed to each other, as is the case when reason and appetite are opposed, it happens only in creatures endowed with a sense of time. (For reason, on account of the future, bids us resist, while desire regards the present; the momentarily pleasant appears to it as the absolutely pleasant and the absolutely good, because it does not see the future.)[2]

The practical reason, it thus appears, is a due regard for future pleasure, — in other words it is prudence. And prudence is, in fact, Aristotle's great virtue. He rejects the Socratic doctrine that virtue is knowledge, since the sphere of the moral life he considers to be among pleasures and pains rather than in knowledge, though he claims that "one cannot be, strictly speaking, good without Practical Wisdom, nor Practically-Wise without moral goodness,"[3] seeing that the widest knowledge is necessary to the greatest prudence. From the series of voluntary decisions, a habitual kind of conduct is generated, which is the moral character.

There is a brief outline of Aristotle's psychology of action or of motives. The remaining point of interest to us is his treatment of the leading interests of human nature. He discusses these most explicitly in the Rhetoric, for the immediate purpose — rather common then among rhetoricians — of teaching orators how best to persuade or appeal to the emotions of their audiences. Some of his advice is worth our while yet. You must pay attention not only to the logic of your arguments, he tells his students, but also to the passions of your hearers.

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[1] De Anima 433a; p. 133. Cf. Nic. Eth., 1139.

[2] *Ibid.*, 433b7; p. 133.

[3] Nic. Eth. 1144b, Book VI, ch. xiii. Cf. Rhetoric Book I, ch. vi, list of goods.

> For we give our judgments in different ways under the influence of pain and of joy, of liking and of hatred. The man who desires and is hopeful. . . thinks that it will be, and that it will be good; the man who is indifferent, or who feels a difficulty thinks the opposite.[1]

Here is the alliance between the wish and the thought, in pseudo-logical reasoning, which is furnishing so much occupation to the Freudian psychologists.[2] In analyzing pleasure he sometimes appeals to the evidence of the will itself, thus falling into the circular reasoning pointed out in Chapter II, "Everything, too, is pleasant of which the desire exists in one; for desire is appetite of the pleasant." In general, it is pleasant to conform with nature; hence to follow a habit, even if it was painful in the learning, is pleasant, "for an acquired habit comes to be as a natural instinct, . . . for ' often ' and ' always ' are neighbors, and nature is concerned with the invariable, as habit with the frequent." He also confirms the poet's saying that "every compulsory thing is grievous." On this account "acts of attention, earnest or intense efforts, must be painful, for they involve compulsion, and force, unless one is accustomed to them." This may be a dictum that labor is generally irksome, though among the pleasures enumerated is the line of Euripides, "To spend one's time in the occupation in which one seems to be at one's best." He characterizes pleasures as irrational and rational; the former referring to the sensations of the body, and the latter to desires formed on conviction, through imagination, memory and hope. Other pleasures mentioned are love and even mourning, revenge, strife, honor, novelty, learning, imitation of good works, flattery ("since everyone is selfish") and ruling. The pains are the "opposites" of these.[1]

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[1] Rhetoric, Book I, ch. xi, par. 5; Book XI, ch. i, par. 4 (Jebb).

[2] Aristotle discusses, in Book VII of the Nicomachean Ethics, the paradox of a man acting in opposition to his own judgment or knowledge, explaining that the "knowing better" is dormant at the time of action and does not arise in consciousness. Sidgwick took up the problem in an article "Unreasonable Action," Mind, N. S. 11, pp. 174-188 (1893) and called attention to the sophistical reasonings by which men justify their momentary desires. McDougall cites this latter article, rather "unreasonably," it seems to us, as evidence that Sidgwick thought "reasonable" action to be the normal and typical action of all men (Social Psychology, p. 9). Apparently we are not to suppose that men usually look before they leap without supposing that always they know exactly where they will land, according to the anti-intellectual critics.

Perhaps more fundamental for the theory of motives is his catalogue of the 'Affections,' — a term much used by the classical psychologists, and nearly synonymous with the other favorite term 'Passions.' These names comprehend the dominating and fairly universal motives to action, which, it was always recognized, are often carried to excess. Aristotle refers to the affections as "those things, being attended by pleasure or pain, by which men are altered in regard to their judgments," this quality constituting their importance for the Rhetorician. He discusses them in pairs of opposites, with the characteristics and causes, under the following heads: anger and mildness; friendship and enmity or hatred; fear and boldness; shame and shamelessness; favor or gratitude, and ingratitude; pity and indignation; emulation and envy.[2]

There are numerous overlappings in these affections and other causes of pleasures, as is likewise the case in most modern accounts of instincts and other interests. Anger, he says, is mainly due to slighting or disdain, either of the subject or of something dear to him. Enmity is distinguished from anger chiefly by the length of time it lasts. Shame is pain or trouble from prospect of ignominy. Emulation is a commendable desire for goods for one's self; Envy is pain that another has something good. We shall bear this list of affections in mind as we examine the suggested list of leading human motives put forward by other writers down to the present.

It will be noticed that he has not given avarice or the desire for wealth as one of the affections, although he, in common with most other moralists of history, considered the pecuniary interest among the most general and powerful motives in human life.[3]

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[1] All these quotations are from the Rhetoric, Book I, chs. x and xi (Jebb).

[2] *Ibid.*, Book II, chs. ii–xi.

[3] E. g., Politics 1267b19 (Book II, ch. vii): "The avarice of mankind is insatiable."

But he was aware that wealth is an 'instrument' rather than a primary good,[1] though he did not always keep the distinction clearly in mind. In describing the affections, he presupposes the desirability of wealth, friends, power and honor. The discussions illustrate the great difficulty of discerning introspectively the original wants or motives, and the principles of their elaboration, especially if one realizes that in many cases the thing which was originally desired as a means comes to be sought as an end in itself.

Probably the space we have devoted to Aristotle is out of proportion to his importance for our present topic, either by way of excess or deficit. His doctrine on motives, that is to say, passed to his successors scattered through many pages of ambiguous and disconnected sentences,—the imperfections of exposition being due more to the conditions of transmission, doubtless, than to confusion in his thought. We have simply attempted to condense and make coherent what he had to say on the motives of mankind and our version, based chiefly on the translations of a few of his works, agrees essentially with the version of the translator who made a careful study and analysis of the whole of Aristotle's psychology. Yet we must recognize that the jumbled condition of his writings must have prevented the greater part of his readers from getting any definite, unequivocal doctrine from Aristotle, and it has enabled the most diverse schools of thought to trace their pedigrees to him. In particular, the self-realization schools of ethics, of which T. H. Green is the most conspicuous exponent, find the source of their anti-hedonist theories of action in the great philosopher. They doubtless find plenty of passages which support them, especially those of metaphysical tenor.[2] There is no occasion here for controversy, even if we were competent to enter upon one. Our purpose has been accomplished in showing that the seeds of a naturalist, sensationalist, hedonist account of the springs of action are to be found in the writings of the man whose authority up to the beginning of the nineteenth century was almost beyond comparison in the educated world. Opposing currents of philosophy and science caused the naturalist psychology to be ignored for ages, but the scattered sentences were read by every cultured person from Aristotle's time — not to ours, but to the age of the classical economists — and the scholars in philosophy, ethics, politics and the early social sciences throughout those centuries had all this material in the back of their heads. As we shall see, they added little to it except system and the verification of their own observations.

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[1] Rhetoric Book I, ch. xi: (In the list of goods, along with happiness, health, beauty, etc.) "Wealth, again: — for it is the excellence of possession, and a thing productive of many others." Cf. Nic. Eth., Book VII.

[2] Hammond, in his introduction, after developing Aristotle's view of the relation of desire and reason in forming the human will, says (p. lxxi): "In the foregoing I have had regard to the moral will. In a general sense, however — perhaps akin to Schopenhauer's conception — Aristotle employs the term *energeia* (all organic effort) as will. This form of will or activity is, in his teleological view of the world, impulse to the good or a striving towards self-realization, whether in plant or animal."

GROTIUS

From Aristotle to Hobbes there were no advances, from the modern point of view, in psychology; but we may linger a moment over the work of a seventeenth century optimist (on the questions of human nature), whose work achieved a commanding prestige throughout the world, — Hugo Grotius. His Law (or Rights) of War and Peace was published in 1625, more than a century after Machiavelli wrote The Prince. Grotius supported his theories of international law by a doctrine of the existence of social or benevolent instincts in human nature, in addition to the commonly accepted self-regarding impulses. Here we find the modern scientific spirit again invading the fields of ethical and political inquiry. It looks, not particularly to divine revelation, nor to the speculations of philosophers as to the effective power of the Good, but into the natural world, where God's purposes are thought to be revealed by his works, — by the orderly and uncapricious round of phenomena. We shall presently find a similar spirit in Adam Smith's ethical system, which represented a large and growing intellectual movement in the eighteenth century.

Grotius takes issue at once with the philosophers and poets before him who have maintained that:

> Nature prompts all Men, and in general All Animals, to seek their own particular Advantage; so that either there is no Justice at all, or if there is any, it is extreme Folly, because it engages us to procure the Good of others to our own Prejudice.[1]

No, says Grotius; man is indeed an animal, but one with some special traits.

> Now amongst the Things peculiar to Man is his Desire of Society, that is a certain Inclination to live with those of his own kind, not in any Manner whatever but peacably and in a Community regulated according to the best of his understanding. . . .
>
> For even of the other Animals there are some that forget a little the Care of their own Interests in Favor either of their young ones or those of their own kind. Which in my Opinion proceeds from some Extrinsick intelligent Principle because they do not show the same Disposition in other Matters that are not more difficult than these. The same may be said of Infants in whom is to be seen a propensity to do Good to others before they are capable of instruction.[2]

This instinctive sociability, he says, is one real foundation of right conduct, and of our respect for the property and privileges of others; but he does not despise the cementing force of 'utility' in the narrow egoistic and hedonistic sense.

> By reason that Man above all other Creatures is endued not only with this *social* Faculty of which we have spoken but likewise with Judgment to discern things pleasant and hurtful and those not only present but future and such as may prove to be so in their Consequences; it must therefore be agreeable to human Nature that according to the Nature of our Understanding we should in these Things follow the dictates of a right and sound Judgment and not be curbed either by Fear or the Allurements of present Pleasure nor be carried away violently by blind Passion.[3]

Prudence, therefore, he believes is a part of natural right that is one of the laws of our nature. Yet those who see in social arrangements nothing but convenience in pursuing selfish ends are mistaken. The old saw, "Interest, that Spring of Just and Right," is not literally true. It simply happens that utility conspires with sociability to make society more secure.

> The Mother of Natural Law is human Nature itself which although even the necessity of our subsistence should not require it would of itself create in us a mutual Desire of Society . . . but to the Law of Nature Profit is

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[1] Rights of War and Peace, preliminary discourse, Sec. 5.

[2] *Ibid.*, Secs. 6 and 7.

[3] *Ibid.*, Sec. 9.

annexed: for the Author of Nature was pleased that every man in particular should be weak of himself and not want of many Things necessary for living commodiously to the End that we might more easily effect Society. . . .[1]

In this book, then, the theory of social and kindly 'propensities' or instincts, having no reference to a *quid pro quo*, a theory backed up by observations of mutual aid among the lower animals, is explicitly applied to social science, and the doctrine of the providential reënforcement of the social instincts by harmony among selfish interests is hinted at. As was intimated in Chapter II, Grotius' views are perfectly compatable with psychological hedonism, for a man's pleasure might well be in unselfish acts. The position he is attacking is that man is naturally completely egoistic, not that he naturally seeks pleasure. The natural tendencies along both these lines must be thoroughly explored before a complete theory of motives is to be obtained.

HOBBES

Hobbes' Leviathan was first published in 1651, twenty-six years after the great work of Grotius. In this political treatise we find a pessimistic theory of human nature — that is to say a doctrine of natural egoism — backed up by a clean-cut psychological analysis along hedonist and associationist lines. It was probably the first improvement, as a modern student looks at it, upon Aristotle's psychology; the improvement consisting in a more clear and unequivocal exposition, and in the advances toward a formulation of mental processes upon mechanical or physiological principles. The book bears the impress of three great influences in Hobbes' life, — his classical learning, his acquaintance with the work of the great early modern scientists (William Harvey and the astronomers of the period), and the bloody English civil wars which tossed him as a refugee back and forth across the Channel.[2]

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[1] Rights of War and Peace, preliminary discourse, Sec. 17.

[2] The tribulations of the Royalist Party with which he was affiliated undoubtedly added to the sharpness of his sense of society's precariousness in the face of human selfishness and pugnacity; though his psychology had been substantially formed previous to the civil wars and was published in a treatise on Human Nature around 1630.

He begins with a chapter on "Sense," — or sensation, as we call it. "For," he explains "there is no conception in a man's mind, which hath not at first, totally, or by parts, been begotten upon the organs of Sense,"[1] — which still is a disputed point. The cause of sense, briefly, is that an external object presses upon the organ of sense and communicates a motion to the nerves, which thereupon carry the motion to the brain and the heart, causing there a "resistance or counter-pressure, or endeavor of the heart to deliver itself."

In the next chapter he treats of imagination or "Fancy," which is simply "decaying sense," that is, slight "motions within us reliques of those made in the sense" (Chs. II and III). Memory is based on the same slight vibration. Next he treats of the "train of imagination," and states that all association of ideas is based on the one law of succession or contiguity. "When a man thinketh on any thing whatsoever," says Hobbes, "His next Thought after, is not altogether so casual as it seems to be." They always proceed in the order in which the sensations were given (Ch. III). He distinguishes, however, between those associations which occur in idle revery, and those in trains of thought dominated by some strong desire. In the latter case the associations are directed backward to a chain of causes toward means of satisfying the desire. Here he touches on a problem that is still a puzzler for psychology, — the "selective agency" of purpose, in the process of directive thought or other purposive effort.

Now turn to his chapter on the "Passions," where his explanation of the will or voluntary movement is given (Ch. VI). Some of the vital motions, as of the blood and breathing, require no imagination, he says; but voluntary movements do presuppose imagination. There must be a precedent thought of "whither, which way, and what."

> The small beginnings of motion, within the body of man are appetites or aversions. Some of them are born with man; as appetite for Food . . . of Excretion and exoneration . . . and some other Appetites, not many. The rest, which are Appetites of particular things, proceed from experience, and trial of their effects upon themselves, or other men. For of things we know not at all, . . . we can have no further Desire, than to taste and try it.

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[1] Leviathan, Ch. 1.

Now any particular man calls the object of his appetite or desire *good*, and the object of his aversion *bad*. The terms good and bad have no other than personal meaning, except where there are laws of a Sovereign. The "motion" of appetite is pleasure, of sense or of mind; "pleasures of the mind" come from foresight of pleasant consequences to the senses.

Now as to the control of the reason over the passion. Hobbes' chapter on the reason does not help us much in this connection, as he is trying to show that the use of syllogisms is nothing but addition and subtraction, and by the same token liable to error, which point is made manifest, he thinks, by the reasonings of his opponents. The process depends on the use of speech and on naming. He speaks elsewhere, however, of the mental process of following forward a chain of consequences from a given event, according to knowledge already gained by experience. Concerning Prudence, he says it is identical with foresight, providence, or wisdom, and that it consists in conjecturing the future from experience of like chains of causes in the past —

> Though such conjecture, through the difficulty of observing all circumstances, be very fallacious. But this is certain; by how much one man has more experience of things past, than another; by so much also he is more Prudent, and his expectations seldomer fail him (Ch. III).

Prudence in imagining the causes which will possibly satisfy a felt desire is common to man and beast. "There be beasts," says he, "that at a year old observe more, and pursue that which is for their good, more prudently, than a child can do at ten," — so little belief had he in instincts, as untaught abilities to perform complex acts. It is therefore the more interesting to find him saying that disinterested curiosity, which leads a person to examine all possible effects of any given event, apparently without reference to his own pleasures and pains, seems to be a purely human characteristic. "I have not at any time seen any signe" of it except in man, he says; it can be "hardly incident to the nature of any living creature that has no other Passion but sensuall, such as hunger, thirst, lust, and anger." (*Ibid.*) His brief description of deliberation, if compared with these remarks on prudence, will give his general views on the relation of reason to action. Appetites and aversions concerning a proposed act will arise in rapid alternation in one's mind, according as good or evil consequences are discerned. This process of deliberation continues until some one appetite finally passes into overt action and becomes the will (Ch. VI).

The last point for us to notice is his estimate of the prevailing passions or leading motives in human nature generally. He catalogues a long string of passions, each compounded on the preceding appetitive entities. For instance, "displeasures, are some in the sense, and called Payne; others, in the Expectation of consequences, and are called Griefe."

> Griefe, for the successe of a Competitor in wealth, honour, or other good, if it be joyned with endeavour to enforce our own abilities to equall or excede him, is called Emulation: But joyned with Endeavor to supplant, or hinder a Competitor, Envie. (*Ibid.*)

The list of passions contains such diverse names as courage, anger, diffidence, benevolence, good nature, covetousness, ambition, liberality, miserableness and many others; passive states of mind and active desires being confused as in Aristotle's list.

Although most of his passions are egoistic, we notice some exceptions: benevolence, magnanimity, kindness, one species of love, and especially curiosity. The latter is "a lust of the mind, that by a perseverance of delight in the continuall and indefatigable generation of Knowledge, exceedeth the short vehemence of any carnall Pleasure."

In his well-known chapter on "The Natural Condition of Mankind," he asserts again, as he has in his introduction, that men are all very much alike as to ability and passions, and alike are they all conceited. Mentally they are still more equal than physically; and the weakest can by machination kill or rob the strongest. "So that in the Nature of Man, we find three principall causes of quarrell. First, Competition; secondly, Diffidence; thirdly, Glory. The first maketh men invade for gain; the second for Safety; and the third for Reputation" (*Ibid.*, Ch. XIII). "Competition," it seems, is the acquired desire for material goods or means of enjoyment of the senses. The state, or organized social power — the sovereign — is made possible partly by the passions themselves, and partly by the reason. The passions which incline men to peace, in the state of nature, are fear of death and desire of enjoyment of wealth; reason shows them they can combine mutually to limit one another's liberties. The passions leading to crime, he says elsewhere, are especially Hate, Lust, Ambition and Covetousness. They are so strong that they can hardly be restrained by reason, and the constant exercise of severe punishments is required to keep them in check (Ch. XXVII). In a comparison of animal and human societies, possibly suggested by Grotius or Aristotle, he says that many of the lower creatures get on amicably in societies without any sovereign to overawe them, because they are lacking in individual conceit, and so their private interests are naturally harmonious.[1]

Now Hobbes, to be sure, is out of date, —nearly three hundred years. His psychology is of little use to us directly except for his observations on the dominant motives of the general run of men, which are doubtless to be taken with some reserve. (It is doubtful if he would greatly change his mind if he could return now and learn all that we have to offer him; but facts, apparently, are interpreted differently by different men, partly by reason of varying innate intellectual mechanisms.) His system was studied assiduously, however, by a line of philosophers including the association psychologists of the early nineteenth century. James Mill was thoroughly familiar with Hobbes' work. Utilitarianism owed much to the latter in several directions, as the major premise of his political arguments was the paramount good of a maximum fulfillment of human desires. But one of the most significant features of his teachings, so far as we are concerned, is that while he reduced all motives ultimately to egoistic pleasures of sense (or purported to), he had to recognize some powerful universal passions such as curiosity, benevolence, anger and the desire for honor, which would certainly have given him considerable difficulty had he tried to distinguish the elementary sensations involved.

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[1] It is true that certain living creatures, as Bees, and Ants, live sociably one with another (which are therefore by *Aristotle* numbered amongst Politicall creatures); and yet have no other direction, than their particular judgments and appetites; nor speech, whereby one of them can signifie to another, what he thinks expedient for the common benefit: and therefore some man may perhaps desire to know, why Man-kind cannot do the same. To which I answer,

First, that men are continually in competition for Honour and Dignity, which these creatures are not; and consequently amongst men there ariseth on that ground, Envy and Hatred, and finally Warre; but amongst these not so.

Secondly, that amongst these creatures, the Common good differeth not from the Private; and being by nature inclined to their private, they procure thereby the common benefit. But man, whose Joy consisteth in comparing himselfe with other men, can relish nothing but what is eminent.

Thirdly, that these creatures, having not (as man) the use of reason, do not see, nor think they see any fault, in the administration of their common businesse: whereas amongst men, there are very many, that thinke themselves wiser, and abler to govern the Publique, better than the rest; and these strive to reforme and innovate, one this way, another that way; and thereby bringeth into Distraction and Civill warre.

Fourthly, that these creatures, . . . want that art of words, by which some men can represent to others, that which is Good, in the likenesse of evill; . . . Ch. XVII.

Connections with Epistemological Controversies

Inquiry into the psychological hedonism of the utilitarians and classical economists also takes us dangerously near the epistemological and ethical controversies centering around the works of Descartes, Locke, Hume and Kant, — to go no further. We must avoid this labyrinth, but it cannot escape our notice that the 'innate ideas,' 'intuition,' and 'categorical imperatives' — all psychological hypotheses formulated in the service of morality and the belief in the external world — are of the same lineal stock as our modern theories of instinct. The teachings of Locke, Berkeley and Hume, directed against the innate idea doctrine, culminated, it will be remembered, in Hume's assertion that all our knowledge and belief is derived from our sensations according to their psychological, not logical, associations. Psychological associations is a matter of temporal contiguity, which, as Locke has shown, may be a very hit or miss order and not related to eternal or physical necessity at all. There was no assurance of a real world back of our sensations, our variable beliefs are simply generated by individual experiences and associations of sensations. There is, accordingly, no rational and external basis of morals, but only the pleasant feeling which men in general experience at the sight of virtuous acts.[1]

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[1] David Hume, Treaties of Human Nature, Bk. III, pt. 1, sec. 2 (1740).

This scepticism stirred Kant on the Continent and Reid in Scotland to substantiate the real world and the eternal character of morality by the hypothesis of ‘intuitions,’ or inborn knowledge or beliefs which supplement the impressions we derive from our senses. These intuitions, they taught, give us authoritative evidence of the existence of real objects, of God, of right and wrong, etc. They differ from instincts in the modern sense as knowledge of real things differs from mere feeling or from the capacity for action of a certain kind, in a species of animals. Hume had noticed the domestic instincts in treating of the ‘passions,’ but he considered that they proved nothing about real existence. Now both Hume and Dugald Stewart, the follower of Reid, were close friends of Adam Smith, and James Mill acknowledged both as his masters in certain respects.

CHAPTER IV

THE PSYCHOLOGY OF ADAM SMITH

Hints in Wealth of Nations

With the foregoing attempts at orientation, we take up the psychology of Adam Smith, as it concerns human motives. There are various hints of it in the Wealth of Nations, but it is to be found in fuller and more explicit form in his earlier ethical treatise, the Theory of Moral Sentiments (1759). In the Wealth of Nations, as is well known, he assumes the general prevalence of economic 'self-interest,' or, as we might express it, 'pecuniary egoism,' — a general inclination in all men to drive as good a business bargain for themselves as possible. The suggestion has been made that he was unduly influenced by the peculiar traits of his own people, that he assumed "there was a Scotchman inside every man." Certainly he considered the spirit of accumulation to be a strongly-marked human character, and doubtless he took for granted some 'rationality' in the pursuit of it. The desire of nearly every man for wealth is boundless, he intimated, for though the stomach is soon filled, the "passion for ostentation" seems to be without limit.[1] He recognizes non-utilitarian forces in industry, however, such as the instinct or "propensity" to truck and barter [2] and there are expressions hinting that saving is a quasi-automatic process, most people preferring future and more abundant enjoyments to present scanty pleasures.[3] He repeats his emphasis on the urgency of the saving impulses by saying that they bring constantly increasing national opulence, in spite of the worst governmental extravagance. "Like the unknown principle of animal life, it frequently restores health and vigor to the constitution, in spite, not only of the disease, but of the absurd prescriptions of the doctor."[1]

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[1] Wealth of Nations, Bk. I, ch. ii, pt. 2 (Vol. I, p. 165 of Cannan's edition).

[2] *Ibid.*, Bk. I, ch. ii. The substance of this passage is also in his original Lectures, p. 169 (cited by Veblen, Quar. Jour. Econ., Vol. XIII, p. 399).

[3] With regard to profusion, the principle which prompts to expense is the passion for present enjoyment; which, though sometimes violent and very difficult to be restrained, is in general only momentary and occasional. But the principle which prompts to save is the desire of bettering our condition, a desire which, though generally calm and dispassionate, comes with us from the womb and never leaves us until we go into the grave. In the whole interval which separates those two moments, there is scarce perhaps a single instant in which any man is so perfectly and

Theory of Moral Sentiments

Now let us see how these psychological views of "propensities" and "self-interest" are fitted together in his Moral Sentiments, into an ethical system. Then we can consider the parts which have special economic significance.

It becomes clear in the first two chapters that Adam Smith believes in non-egoistic instincts, for he vigorously combats the idea that the "principle" of sympathy is a "refinement of self-love." The pleasures of sympathy are so instantaneous, and are shown on such frivolous occasions, that it is absurd to account for the phenomena by assuming manifold calculations of self-interest. He cites the pleasure of getting a laugh from the company at one's joke, and of reading to a friend a poem which one has found especially enjoyable.[2] Consequently, however selfish a man may be, he is not without disinterested sympathy, or capacity to feel some stirrings of the same emotions which he perceives another person to be experiencing. There is, in this treatise, little explicit theory as to sensation, ideas and associations; doubtless he considered that his friend Hume had sufficiently attended to them, and he was interested only in tracing the interweavings of the original traits or passions of human nature in the production of the 'moral sense.' He did not consider moral judgments to be intuitive and

completely satisfied with his situation as to be without any wish of alteration or improvement of any kind. An augmentation of fortune is the means by which the greater part of man propose and wish to better their condition. — *Ibid.*, Bk. II, ch. iii (Vol. I, p. 323, Cannan's ed.).

[1] Wealth of Nations (Cannan's ed.), Vol. I, p. 325. In the Moral Sentiments, however, he asserts that a pleasure which is to come ten years hence attracts us very little in comparison with one of today; and the need of acquiring prudence and self-command over the natural immediate passions runs all through this earlier work (see Pt. IV, ch. ii, p. 329 of the edition of 1812).

[2] Theory of Moral Sentiments, Pt. I, sec. 1, ch. ii.

unanalyzable but to be the resultant of various instinctive proclivities such as sympathy, resentment and gratitude.

The principle or instinct of sympathy, according to Smith, does not prompt the agent to any special course of action upon the presentation of a certain external situation (as is the case with the food-getting instincts, for instance), but it causes every human being, when he is in the presence of another person who is experiencing an emotional reaction to some particular object, to feel a lesser degree of that same emotion. The judgment of the impartial spectator as to what expression of the other's passion is fitting to the occasion, is the natural judgment of the "propriety" of any action. He thinks we are all somewhat egoistic and prone to overestimate our fortunes and misfortunes, so that the bystander who apprehends our situation sympathetically, but yet does not experience the full degree of our passions, is able to give a more accurate account of the merits of the case than ourselves.

In another preliminary section he discusses the passions under the following heads: those originating in the body, those originating "from a particular turn or habit of the imagination," unsocial, social, and selfish passions.[1] The bodily passions are obvious; the "peculiar turn of the imagination" is an individual attachment such as the love of a particular person. The unsocial passions are hatred and resentment; these are, however, "necessary parts of the character of human nature," and are sympathized with in appropriate circumstances. The social passions are generosity, humanity, kindness, mutual friendship and esteem; these are always pleasing to the spectator for he can sympathize both with the subject and with the object of them. Probably he meant to include gratitude in this latter category, as he later assigns it an important place in the moral sentiments. The selfish passions are in between the social and unsocial. These are "grief and joy on account of our own private good and bad fortune," — that is, the pain which comes from frustration of our passions, or the pleasure of their fulfillment. It would appear that he considered most of these passions innate endowments of human nature, though we cannot be quite sure as to what his list of such indivisible traits would have been. A particular attachment could hardly be such a trait, and to say that it is common to all men to form particular attachments does not enlighten us much unless common features of these attachments can be discerned.

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[1] Theory of Moral Sentiments, Pt. I, sec. 2, chs. i–v.

Propriety, then, is the degree of any passion or emotion which a bystander knowing the circumstances entirely sympathizes with. It is the affection which is properly proportioned to its provocation. Now comes a discussion of merit and demerit, which is concerned with the action taken by the person feeling the original passion on account of its excitement, and is concerned further with the consequences of that action (Pt. III). Adam Smith further believes that the motives to an action, including the intention of the agent, are the only things to be considered in forming a moral judgment on the whole act. Practically, he admits, the consequences have also to be considered, on account of our prejudices, and these prejudices are even providentially arranged, since moral judgments which take account of consequences teach people to be careful. The judgment of merit and demerit is based upon the sympathy of the impartial and informed bystander, with the passions both of the agent and of the person toward whom his reaction is directed. The judgment of merit or benevolence is sympathetic participation in the gratitude of the person toward whom the agent does a good turn; the judgment of demerit is sympathy with the instinctive resentment of a person who is injured. These two instincts make social life possible among primitive men, for resentment places an automatic check upon injuries, and the sympathetic appraisal of such resentment by people not directly affected moderates resentment into real justice. Merit and demerit imply rewards and punishments, which are approved and perhaps conferred by the onlookers collectively; whereas the propriety of behavior as exhibiting feeling is reflected only by the private attitude of approval or disapproval of members of the social group.

The individual's sense of private duty, that is his moral sense or conscience is next discussed, and is found to proceed from the human capacity for impartial sympathy with the acts and feelings of other people.

> We either approve or disapprove of our conduct, according as we feel that, when we place ourselves in the situation of another man and view it, as it were, from his station, we either can or cannot entirely enter into and sympathize with the sentiments and motives which influenced it.[1]

No such sense of duty would exist in an individual who should live his whole life in complete solitude, any more than a sense of human beauty would be possible. (The esthetic and moral natures are very closely connected, according to Smith.)

> But bring him into society, and all his own passions will immediately become the causes of new passions. He will observe that mankind approve of some of them, and are disgusted by others. He will be elevated in the one case and cast down in the other. . . . (*Ibid.*)

Hence, experience with the way our own sympathies deal with the feelings and acts of other people, and our observations as to how our own conduct is reflected in the attitudes of our neighbors, build up the "man within the breast," or conscience, who sees ourselves very much as others see us; who takes an objective view of the situation leading to action and thus is able to dominate our passions from consideration of ulterior effects. In some passages marked by his characteristic noble eloquence, he describes the struggles of conscience with "self-love," when one's private good is opposed to the greater good of others. Conscience is supreme "in the generous upon all occasions, in the mean upon many," he says; and

> . . . the man within calls to us, with a voice capable of astonishing the most presumptuous of our passions, that we are but one of the multitude, in no respect better than any other in it; and that when we prefer ourselves so shamefully and blindly to others, we become the proper objects of resentment, abhorrence, and execration.[2]

He sometimes speaks of the "man within," or conscience, as synonymous with the reason.

More Especially Economic Psychology

So much for the outlines of Smith's moral system. We can now collect some scattered but economically significant psychological doctrines from the work without great danger of misrepresenting his larger meanings.

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[1] Theory of Moral Sentiments, Pt. III, ch. i, p. 189.

[2] *Ibid.*, Pt. III, ch. iii, p. 230.

In the first place, we cannot but notice the frequency with which he argues against the contention that morality is based upon human perceptions of utility. He has devoted three whole chapters to such refutations, besides numerous smaller passages throughout the book. We have seen that he denied this explanation of the facts of sympathy. Morality is indeed useful for the preservation of society, he admits, and our personal welfare is of course bound up with the survival of the whole group; but men practically never reflect upon this fact of social utility or solidarity when they spontaneously condemn immoral practices (Pt. II, sec. 2, ch. iii). It simply happens that the direct and often selfish human impulses were arranged by that Great Watch-maker, Nature, so that the general effect of the actions they lead to is the preservation of society. Of the many allusions to the beneficent Order of Nature the following may be found typical:

> The economy of nature is in this respect exactly of a piece with what it is upon many other occasions. . . . Thus self-preservation, and the propagation of the species, are the great ends which Nature seems to have proposed in the formation of all animals. . . . But though we are in this manner endowed with a very strong desire to those ends, it has not been entrusted to the slow and uncertain determinations of our reason, to find out the proper means of bringing them about. Nature has directed us to the greater part of these by original and immediate instincts. Hunger, thirst, the passion which unites the two sexes, the love of pleasure and the dread of pain, prompt us to apply those means for their own sakes; and without any consideration of their tendency to those beneficent ends which the great Director of nature intended to produce by them.[1]

Here is quite a modern view of the nature of instinct, and it is perfectly clear that he considered the moral sense based on some such unforeseeing propensities.

Recognition of other innate and non-utilitarian bents comes out in several places. In combating the idea that associations of narrow "utilities" determine all our tastes or esthetic appreciations, he observes that those men who have the strongest desire for accurate watches or for many pockets in their clothes are not usually more punctual nor more conveniently equipped than are other people; also that statesmen almost never consider systems of government simply in relation to their effects upon the happiness of the people. "From a certain love of art and contrivance we sometimes seem to value the means more than the end," and in general, if you want to stimulate a lazy man to industry or a public official to improvement of his system of government, do not speak to either one of the ultimate substantial comforts, or consumers' utilities which these reforms will secure. Speak to the one rather of the magnificent array of useless equipages, houses, servants, clothes and so on which he can get as the reward of his labors; and to the other of the beautiful system or machine of curiously contrived, interconnecting political agencies which he will thereby have to manage (Pt. IV, ch. i).

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[1] Theory of Moral Sentiments, Pt. II, sec. 1, ch. v, note.

The sense of duty, moreover, is made up in considerable measure, as the reader must have noticed from our account of it, of the instinctive desire for the approval of one's fellows.

> Nature, says Smith, when she formed man for society, endowed him with an original desire to please, and an original aversion to offend, his brethren. The All-wise Author of Nature has, in this manner, taught man to respect the sentiments and judgments of his brethren. . . . He has made man, if I may say so, the immediate judge of mankind . . . and appointed him his vicegerent upon earth, to superintend the behaviour of his brethren (Pt. III, ch. ii, pp. 200, 219).

Though we must notice that he contends against the notion that this desire for other peoples' approval is the whole of the sense of duty.

Emphasis on Desire for Distinction

Another universal human disposition which Adam Smith constantly dwells upon, is the craving for social distinction; and he expatiates on the common pursuit of it through ostentatious luxury. Possibly this proclivity should be reduced to the same psychological elements as the love of praise which he has mentioned in connection with the moral sense; but Smith attributes the desire for social distinction to a peculiar quality of original sympathy,—that we sympathize with, and give attention to, the (real or supposed) small joys of our neighbors to a much greater degree than their slight sorrows.

That he considers social ambition (however it may be accounted for) the main spring of economic activity — and of political activity too, it would seem — is made evident in very many passages; and he recognizes the "corruption of the moral sentiments" which this force frequently causes. A section containing several chapters is devoted to the "effects of prosperity and adversity upon the judgments of mankind with regard to the propriety of action"; and there we read:

> To what purpose is all the toil and bustle of this world? What is the end of avarice and ambition, of the pursuit of wealth, of power, of preheminence? Is it to supply the necessities of nature? The wages of the meanest laborer can supply them. . . . If we examine his economy with rigor, we shall find that he spends a great part of them upon conveniences, which may be regarded as superfluities, and that, upon extraordinary occasions he can give something even to vanity and distinction.

Is the fare and shelter of the rich so much better than that of the rest of us? If we reflect, we know it is not.

> From whence, then, arises that emulation which runs through all the different ranks of men, and what are the advantages which we propose by that great purpose of human life which we call bettering our condition? To be observed, to be attended to, to be taken notice of with sympathy, complacency, and approbation, are all the advantages which we can propose to derive from it. It is the vanity, not the ease, or the pleasure, which interests us.

Perhaps the clearest expression of this view is in the following sentences:

> And thus, place, that great object which divides the wives of aldermen, is the end of half the labors of human life; . . . People of sense, it is said, indeed despise place; . . . But rank, distinction, preheminence, no man despises, unless he is either raised very much above, or sunk very much below, the ordinary standard of human nature.[1]

In the chapter mentioned above, in which he speaks of the innate love of system or of certain means without regard to the ends they serve, he asserts that this desire for intricate systems of material things is one of the strongest economic motives, more potent in fact than the ultimate utilities of sense. Whatever satisfactions there are to be derived from wealth are usually overestimated in the pursuing of it, he thinks, and this self-deception is a fortunate circumstance for society at large. To no purpose does the landlord survey his broad acres, and in imagination consume all the produce thereof, for the produce will inevitably chiefly feed other people in whom he has no interest. Then follows a passage on the "invisible hand," which has made self-interest promote public interest, in language almost identical with the passage so often quoted from the Wealth of Nations (Pt. IV, ch. i, pp. 317–318). It fortunately happens, he says, that in the lower and middle classes the roads to fortune and to virtue are very nearly the same, — honesty, sobriety, intelligence and industry are the requisites for getting that accumulation of wealth which is desired on account of its social prestige. In the higher ranks, unhappily, the conduct securing distinction is not so often the same as that exhibiting virtue.

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[1] Theory of Moral Sentiments, Pt. I, sec. 3, ch. ii, pp. 81, 92.

> In equal degrees of merit there is scarce any man who does not respect more the rich and the great, than the poor and humble. With most men the presumption and vanity of the former are much more admired than the real and solid merit of the latter (Pt. I, sec. 3, ch. iii, pp. 100, 102).

Two interesting chapters are on the "Influence of Custom and Fashion upon the Sentiments of Moral Approval and Disapproval." He considers, as has been said, the sense of beauty and the sense of right conduct to be closely related. The former, he shows by abundant illustrations, is highly conventionalized, not only with respect to such matters as dress, but with regard to esthetic standards in the fine arts. He points out further that moral sentiments vary considerably in different times and places, although he thinks the major vices are everywhere considered revolting (Pt. V, chs. i and ii). He cites the differences between the virtues of the followers of Charles the Second and those of the Puritans, and the divergent views on infanticide in ancient and modern times, as samples of such fortuitous warpings of moral judgments by custom.

It must be evident from the foregoing that a considerable part of the ' theory of the leisure class ' is to be gathered from a reading of Adam Smith's Moral Sentiments.

Another interesting chapter is "On the Nature of Self-Deceit, and the Origin and Use of General Rules." The man in the breast, he says, is unfortunately not always able to take a really impartial view of one's own situation. Frequently our desire is so strong as to corrupt our judgment.

> The passions, upon this account, as Father Malebranche says, all justify themselves, and seem reasonable and proportioned to their object, as long as we continue to feel them (Pt. III, ch. iv, p. 267).

This fatal weakness in mankind is the source of half the human disorders, and it is mitigated only by our perceptions of the judgments of people who really are removed from the passions and so are disinterested. Eventually the general collective judgments upon classes of actions crystallize into formal rules of ethics; but he repeats that the instinctive and sympathetic impartial feeling about particular cases is the origin and sole authority of such rule.

Suggestions of Hedonism

The sentence following the one quoted above, regarding the innate desire for approval of our fellows, would serve, however, to convict Adam Smith of being a hedonist. "She (Nature) taught him (man) to feel pleasure in their favorable, and pain in their unfavorable regard." Such traces of a pleasure-pain mechanics are rather frequent. He connects gratitude and resentment with pleasures conferred or pain inflicted (Pt. II, sec. 3, ch. i, p. 160); he says that sympathy with joy is agreeable, while it is painful to go along with grief, and therefore we always enter into the latter with reluctance (Pt. I, sec. 3, ch. i, p. 73); and in discussing prudence, he gives a straightforward summary of the tutelage of the appetites (of sense) and of pleasure and pain from infancy to the adult with full-fledged habits. At first the appetites and sensations are the supreme motives, and development is simply of care and foresight in caring for these egoistic interests. But presently the youth perceives that the resources called fortune are desirable not merely to satisfy these original appetites and pleasures but also to win credit, rank, and distinction among his fellows. This latter use develops into the strongest single incentive to money-making. The youth also finds that upon his moral character also depends other peoples' respect, and hence prudence recommends ordinary morality to him (Pt. VI, sec. 1, pp. 370–371). Also in many of his references to the impartial judge within the breast, he speaks of the "acquisition" of self-command, and of the "habit" of viewing our situations impartially. He thinks that the man with most capacity for sympathizing with the passions of others usually has also the larger capacity for acquiring self-command.

Of course he took the power of association and habit for granted; everyone does, they are sufficiently obvious. He was interested only to argue that the human motives are not in all particulars derived from associations of simple, pleasant or painful sensations with the situations or acts through which they have been achieved; and that we have natural pleasures and pains springing from more complex instinctive courses of action. He rejects, definitely and emphatically, the 'utility' explanation of all conduct and desires; he was 'anti-intellectualist' enough to deny that human beings in general calculate and anticipate all the advantages and disadvantages which their various actions do in fact bring about. He thought it more plausible to assume an equipment, in every animal, of "immediate instincts" — some being social and some unsocial — which instincts in the whole creation are providentially arranged in harmony. Of course he uses "utility" in the narrow sense of bodily or sensuous satisfaction, whereas pleasure and pain, to him, were characteristic of all motives whatever, and determined whether the motives should be those of seeking or avoidance.

He never drew the line very sharply between the innate and the acquired in the powerful passions or motives which are important in social life. Hunger, thirst, sex attraction, the desire for approbation, the principle of sympathy, and the general forces of sensory pleasure and pain, are the only instinctive tendencies upon which he is definite. The propensities to truck and barter, to resent injuries and feel gratitude, and to elaborate curious contrivances are also spoken of as original dispositions, however, and apparently were considered part of that characteristic human endowment, not built up by experience or associative combinations of sense-utilities, which endowment was to him the main source of the social and moral forces.

CHAPTER V

THE UTILITARIAN PSYCHOLOGY: JEREMY BENTHAM

It was the special variety of psychological hedonism which was taught by three utilitarian leaders, that became the heritage of the classical economists following Adam Smith; and to this psychological system modern critics ascribe many alleged shortcomings in present-day economic doctrines. It seems worth while, therefore, to undertake a rather full examination of this part of the utilitarian system, so that when later we have considered the testimony of present-day psychology, we can form some judgment as to where the utilitarian errors did, if at all, vitiate the economic theory of these classical economists.

His General Psychological and Ethical System

Jeremy Bentham's Principles of Morals and Legislation was first published in 1789. This work and his Table of the Springs of Action, written some time later and said to have been revised by James Mill, give a fairly complete and systematic exposition of his philosophy of motives, though there are numerous supplementary hints and statements scattered through the dozen volumes of his collected works.

Bentham was an amateur psychologist, even for his time, but he had studied considerable ethical and political literature. Two supposed axioms were becoming commonplace in discussions of those subjects at the end of the eighteenth century, and both were referred to interchangeably as the 'principle of utility.' The first axiom was that men naturally are moved only by pleasure and pain; the second was that the greatest happiness of the greatest number is the sole or chief standard of ethical judgment. These doctrines are known now respectively as psychological and ethical hedonism. Bentham's school was remarkable for its zeal in attempting to put the greatest happiness ethical principle into effect in political affairs, and for expounding in explicit and logical form the psychological hedonist premises, rather than for originating these utilitarian principles.[1]

Bentham's psychology, we repeat, was crude. The then-existing works of Hartley, Hume and Brown, at least, were based on a much closer study of psychological facts than he ever took the trouble to make. But he put the common-sense hedonistic theory of conduct into luminous and popular form, through which it had the widest influence from that day to this, and his fertile mind carried it forward into all manner of projects for social reform. His disciple James Mill, however, who had studied thoroughly the best psychological work then available, wrote in 1829 a systematic treatise in which the utilitarian theory of natural motives was stated in compact and scientifically rigorous form. To that treatise we shall presently turn our attention.

Bentham concentrates attention (so far as his psychology goes) upon the feelings of pleasure and pain, which according to him are the only efficient causes of human behavior. They are, as he says, the 'sovereign masters of mankind.' "It is for them alone to point out what we ought to do, as well as to determine what we shall do," his opening paragraph states. He complains in his introduction that philosophers, including Aristotle, have neglected the "logic of the will" (laws of the springs of action) in favor of the "logic of the understanding" which latter is of importance only because of the understanding's direction of the will.[2] How he defines these original driving feelings we shall see in a moment; here we may observe his statement that happiness, utility, one's interest, all reduce to the same thing, — pleasure, or the avoidance of pain. These terms, as applied to the community, mean the sum of the pleasures or pains of the individuals making it up. The principle of utility, or greatest happiness principle, "approves or disapproves of every action whatsoever, according to the tendency which it appears to have to augment or diminish the happiness of the party whose interest is in question."

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[1] See references in W. C. Mitchell, "Bentham's Felicific Calculus," Pol. Sci. Quar., June, 1918.

[2] Principles of Morals and Legislation, reprint of 1876, p. 13.

He defends both psychological and ethical hedonism, it thus appears. The greatest possible amount of happiness or pleasure in the world is the greatest good — he brushes aside other criteria of the good, such as the alleged intuitive moral sense, they are arbitrary and anarchical — and the greatest happiness is therefore the only proper aim of the legislator, as it is of every citizen.

But each individual is in fact moved by pleasure, says Bentham; and one asks immediately, Is everything, then, as it should be? Do men do nothing wrong? Of course not; Bentham's life was a continual crusade against wrongs. Men are short-sighted in their pursuit of happiness, he explains; every man pursues what for the moment he conceives to be his best interest or good, but he is frequently mistaken as to the long-run results of his actions. *The* great moral reform, therefore, is education; virtue is knowledge. A passage from the Deontology, pieced together rather unintelligently from fragments of his writings after Bentham's death by the disciple Bowring, gives this doctrine in a crude form:

> It will scarcely be denied that every man acts with a view to his own interest — not a correct view — because that would obtain for him the greatest possible portion of felicity; and if every man, acting correctly for his own interest, obtained the maximum of obtainable happiness, mankind would reach the millenium of accessible bliss; and the end of morality — the general happiness — be accomplished. To prove that the immoral action is a miscalculation of self-interest,— to show how erroneous an estimate the vicious man makes of pains and pleasures, is the purpose of the intelligent moralist. Unless he can do this he does nothing: for, as has been stated above, for a man not to pursue what he deems likely to produce to him the greatest sum of enjoyment is in the very nature of things impossible.[1]

So far as this statement goes, his doctrine involves the vicious circle: A man always acts for what he believes to be his own interest; and his interest is that which he does, or would do if he knew enough. The implication is, that a long-run and shrewdly calculating *egotism* will achieve the maximum happiness of society; that there is a fundamental harmony of selfish desires which the moralist may painstakingly discover, and which, when discovered, will automatically lead all men to be virtuous because it will show them how to be most consummately selfish. It is belief in the beneficence of the Invisible Hand's natural order, carried to an extreme limit; but, as we shall see, Bentham did not cling to it consistently all his life. He came to think there are some irreconcilable conflicts of natural desires, which can be arbitrated only by force — the force of society — or by artificially inculcated ideals.

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[1] Deontology, Ch. I, p. 13. Cf. James Mill, Analysis of the Human Mind, Ch. XXII, sec. 1: "For the value of the pleasures in question [for the sake of which a vicious act is performed] is infinitely outweighed by the value of the pains. The business of a good education is to make the associations and the values correspond."

' Simple Pleasures '

Returning to the psychology with which he prefaced the earliest of his major works, we find a catalogue of the ' simple ' pleasures and pains which are the original springs of action. This analysis gives a definite content to the term ' self-interest,' and thus rescues him from the circular reasoning of naïve hedonism.[1] Directions concerning the ' felicific calculus ' are given at the same time, that is, the principles to be observed in measuring pleasures and pains, and in comparing them among each other. These simple and primitive affections he clearly considers to be the only ultimate motives or sources of ' interest.'[2] The elementary pleasures are nine of sense, including those of intoxication of eye and ear ("independent of association"), of health ("especially at times of moderate bodily exertion"), of novelty or "gratification of the appetite of curiosity." Beside these nine alleged pleasures of sense, there are (in the earlier publication) thirteen other simple pleasures, viz.: Those of wealth, skill, amity, good name, power, piety, benevolence (or good-will or sympathy), malevolence, memory, imagination, expectation, those dependent on association, and of relief.[3] The pains are mostly ' opposites ' of the pleasures, as Hobbes would say.

In the Table, constructed long after the Principles of Morals and Legislation, he struck out the pleasures of skill, and specifically stated that there is no pleasure produced by labor as such. In common speech *industry* does have a connotation of interest, he observed, but this interest is simply the desire for the wealth which is to be secured by the labor.[1] As Leslie Stephen remarks, Bentham took great delight in his own labors; but he doubtless considered that such satisfaction was to be attributed to curiosity, moderate bodily exercise and benevolence, which are among his simple pleasures. His exhaustively elaborate classifications, such as the Table of Springs of Action (giving all the ‘ eulogistic, neutral and dylogistic ’ (or derogatory) names for the motive which springs from each pleasure, the ‘ corresponding interest,’ and so on), all serve in some degree to verify the existence in him of that love of system which Adam Smith had commented upon, and the ‘ pleasure of curiosity ’ of his own catalogue.

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[1] Morals and Legislation, Chs. IV–VI; also the Table in Works I, pp. 195–219. The lists are not quite the same in the two references, as will appear.

[2] Morals and Legislation, Ch. X, Motives; marginal note to sec. 2: "Nothing can act of itself as a motive but the ideas of pleasure or pain."

[3] *Ibid.*, Ch. V.

It has been pointed out by his followers as well as by critics that his list of simple pleasures and pains is crude. How he could consider the pleasures of wealth, power, memory, imagination, expectation, association — to go no further — as simple, a psychologist would be unable to understand. James Mill's elements were much nearer to real ones. But it is instructive to notice that he attempted in more thorough-going fashion than his predecessors whom we have examined, to reduce all human motives scientifically to a few specified elementary pleasures and pains, common to all mankind, which elements could be indefinitely varied in their combinations by association; and that further, he included a few altruistic impulses among his simple pleasures. There is no such thing as a *disinterested* motive, he tells us, though there are motives which are not *self-regarding*.[2] His great object is to attack the arbitrary and intuitional systems of morals, which he thought had tended toward moral irresponsibility in practical affairs, and to pin the whole ethical question upon an objective, impartial examination of the consequences of action upon human happiness.

Although people will call any motive by a harsh name in some circumstances, he goes on, no motive is bad of itself. The case simply is that some motives more uniformly lead to good consequences for the general happiness than others. The motive of good-will or benevolence, in fact, usually brings about results that are good for society, and so it is a 'tutelary' motive, restraining the more often harmful interests. Other tutelary motives are love of reputation, amity and religion.[1] He admits of a hierarchy among motives, according to the preponderance of their effects on the community. In the Table he remarks that men in a savage state have existed from the first in countless multitudes, with scarcely a trace of the social or tutelary motives, which indicates that the self-regarding interests, are, after all, chiefly to be thanked for individual and racial preservation.[2]

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[1] Works I, p. 214.

[2] *Ibid.*, p. 212.

He notices, with the classical psychologists and many other ancient observers, our human tendency to beget judgments by wishes and to try to 'rationalize' such conclusions after we have jumped at them: "As by *judgment*, *desire*, is influenced, so by *desire*, *judgment*: witness *interest-begotten prejudice*:"[3] (and throughout his works he frequently testified to the efficacy of 'sinister' or 'interest-begotten' prejudice, which his philanthropies encountered at every turn). Since an action usually may be produced by several motives acting conjointly, "The *best* motive that will be recognized as capable of producing the effect in question, is the motive to which the man himself . . . will be disposed to ascribe his conduct, and . . . to exhibit it in the character of the sole efficient cause," whilst his enemies will do the reverse, as is continually illustrated *by party politics*.[4] He gives quite a modern discussion of such "substituted," or as we might say, 'camouflaged' motives.

The Felicific Calculus

But we must come to the 'felicific calculus,' and to his conception of human rationality, which are the objects of so much suspicion by present-day social psychologists.[5]

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[1] Morals and Legislation, Chs. X, XI. [2] Works I, p. 216. [3] *Ibid.*, p. 208.

[4] *Ibid.*, pp. 218–219. See also long note in Morals and Legislation on the natural rights theory of government.

[5] See the excellent paper, designed to expose the pseudo-simplicity and logical defects of these parts of Bentham's philosophy, by Wesley C. Mitchell, "Bentham's Felicific Calculus," Pol. Sci. Quar., June, 1918.

The greatest happiness principle, says Bentham, is not merely a pious aspiration, but it admits of a definite quantitative logic. The legislator should understand how to evaluate a 'lot of pain' or of pleasure, because they are at once his ends and his instruments or forces. And how evaluate them? A simple pleasure or pain will vary in value to an individual, Bentham replies, according to (1) intensity, (2) duration, (3) certainty or uncertainty, (4) propinquity or remoteness, (5) fecundity or chance of being followed by sensations of the same kind, (6) purity, or chance of *not* being followed by sensations of the opposite kind. When the happiness of a community is under consideration instead of that of an individual, a single criterion must be added to the above, (7) extent, or number of persons affected.[1] Is it an impossible task to make such a calculation? No, says Bentham.

> In all this there is nothing but what the practice of mankind, wheresoever they have a clear view of their own interest, is perfectly conformable to. An article of property, an estate in land for instance, is valuable, on what account? On account of the pleasures of all kinds which it enables a man to produce . . . (or pains avert). . . . But the value of such an article of property is universally understood to rise or fall according to the length or shortness of the time which a man has in it; the certainty or uncertainty of its coming into possession; and the nearness or remoteness of the time . . . it is to come into his possession.[2]

Pleasures, then, being the ultimate values of property, are discounted according to remoteness and certainty; a strong hint in the direction of the time-preference element in the theory of interest.

It is not to be supposed, he says, that the whole elaborate algebraic calculation of pleasure-pain values, in units of a barely distinguishable difference in affective quality (compare Weber's unit of sensation in psychology), should be or is performed previous to every moral judgment, or legislative operation, but it should be kept in view as an ideal.[3] In applying the calculus, moreover, we must always consider thirty-two 'circumstances influencing sensibility' in different individuals, such as health, strength, sex, sanity, climate, education, etc., — these are especially to be related to the severity of punishment, so as to equalize the net pleasures and pains inflicted.

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[1] Morals and Legislation, Ch. IV.

[2] *Ibid.*, Ch. IV, sec. 8.

[3] *Ibid.*, Ch. IV, sec. 6.

He met, of course, with a difficult puzzle in spinning out this introspective theory. How compare different pleasures with one another, either within different minds or within the same mind? How evaluate the pleasure of a cold bath in terms of the pleasure of a symphony? to use Böhm-Bawerk's illustration. Can a man even compare the intensities of the same pleasure to him, at different times?[1]

Bentham came to doubt if the intensity of feelings could be calculated, but at least the duration can, and the factors of remoteness and certainty are also susceptible of mathematical treatment. Pleasures qualitatively different are impossible of direct comparison; it would be like comparing pears with apples, he says. But the idea occurred to him that an individual does equate all his multi-colored desires in terms of the money-unit. Two pleasures, for each of which he is just willing to part with a dollar, can be considered equal. That relieves the difficulty in the case of a single agent. Does it equate the pleasures of different people? No, for Bentham is aware of the principle of diminishing utility, or saturation of pleasure. The monarch's happiness is certainly greater than the laborer's, but how much greater? Not certainly in proportion to their respective incomes. Twice as happy would probably be a liberal allowance. The idea of minimizing the difficulty by using terms of small increments of feeling occurred to him, but was not worked out in much detail.

So that on the whole, the feasibility of an exact hedonic calculus became dubious to him; but because of the commensurability of feelings as to duration, certainty, remoteness and in money measure, and the steady average of human nature which made the circumstances affecting sensibility seem only slightly important, he considered he had rendered morality and legislation exact as well as positive sciences. The puzzles of the calculus are of great interest to mathematical economists, but even if it is hopelessly inexact, the substance of the hedonist theory of human motives may nevertheless be true. We shall return to this question of commensurability in Chapter XVII, after we have surveyed the reports of modern psychology on the influence of pleasure and pain on motives in general.

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[1] See Mitchell's article cited above for quotations from Bentham showing his perplexity on this point, and on other points of the calculus.

HUMAN RATIONALITY

Returning to questions of human rationality and educability, we have seen that Bentham considered the great and only task of the intelligent moralist to be in showing people where their long-run interests lie. Once they see this light, morality is plain sailing, for inevitably people will follow their apparent 'interests,' but temporarily, at least, interest and duty must be made artificially to coincide by governmental machinery; and the older he grew, the more convinced he was that such was the necessary state of things for all time to come. In his youth he had supposed that statesmen would act upon the greatest happiness principle as a matter of course, and that he needed only to show them how they could best promote the general interest. When past middle life, however, he discovered that statesmen also prefer their own private advantage to the greatest happiness of their people, and he was forced to add to his axioms the 'universal self-preference principle,' and to devise cunning machinery for making the ruler's interest coincide with his duty, — that is, with the interests of his subjects.[1] In his Table of the Springs of Action, he is able to sum up the sources of evil as follows:

> *Indigenous* intellectual weakness — adoptive (due to environment) intellectual weakness — or, in one word, prejudice — sinister interest (understand self-conscious sinister interest) lastly, *interest-begotten* (though not self-conscious) prejudice — by one or other of these demonstrations, may be designated (it is believed) the cause of whatever is on any occasion amiss, in the opinions or conduct of mankind.[2]

Is it a hopeless task to combat passion, ignorance and prejudice with refined measures of reward and punishment, and of education as to true interests? Is he assuming a too reasonable human nature? Bentham represents the human will always to be determined by a calculation of the excess of pleasure promised by the contemplated action over the probable pain.[1] 'Interest-begotten prejudice' may be regarded as only a short-circuit to a pleasure-determined volition; and, if it ignores more distant personal interests, that is simply due to the general human imperfection in knowledge which no one has ever overlooked. To the objections that his schemes for reform, based on a nice adjustment of penalties to temptations, would fail because ignorance never troubles itself about laws, while passion does not calculate, he answered (in the first edition of Morals and Legislation):

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[1] See Mitchell, *op. cit.*, p. 177; and Bentham, Works I, pp. 240–259; X, pp. 79, 80.

[2] Works I, p. 217.

> But the evil of ignorance admits of cure: and as to the proposition that passion does not calculate, this, like most of these very general and oracular propositions, is not true. When matters of such importance as pain and pleasure are at stake, and these in the highest degree (the only matters, in short, that can be of importance) who is there that does not calculate? . . . I would not say, that even a madman does not calculate. (Footnote: There are few madmen but what are observed to be afraid of the straight waistcoat.) Passion calculates, more or less, in every man: in different men, according to the warmth or coolness of their dispositions; according to the firmness or irritability of their minds, according to the nature of the motives by which they are acted upon. Happily, of all passions, that is the most given to calculation, from the excesses of which, by reason of its strength, constancy, and universality, society has most to apprehend: I mean that which corresponds to the motive of pecuniary interest; so that these niceties, if such they are to be called, have the best chances of their being efficacious, where efficacy is of the most importance.[2]

That is, as to misconduct over objects of pecuniary value, the statesman can offset the motives to theft, etc., by deterrent punishments which will exert just the necessary strength on the side of honesty. It is rather significant that in treating of individual calculations of pleasures and pains, rewards and punishments, Bentham so often turned to illustrations involving the use of money. The instances of equating different kinds of pleasures, and discounting future utilities, will be remembered. He assumes that we all make the same kind of reckonings on other allegedly primitive utilities, and he does not realize that money computations are possible only because of a great many customs, and institutions, and an accumulation of knowledge, which are ages beyond the really primitive man. Our sophisticated practices regarding money values are evidently no indication of our procedure in estimating non-pecuniary values. The man who is angry enough to strike another is scarcely able to decide just how much he wants to strike, and how a present blow would compare in value with a future blow. But this is again a question of the possible precision of the hedonic calculus; it does not necessarily strike at the fundamental general theory of hedonist motivation.

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[1] Works I, p. 209.

[2] *Ibid.*, p. 91; Morals and Legislation, edition of 1822, Ch. XIV.

Human Educability and Perfectibility

The faith of Bentham and his school in the educability of all men to a wise and nearly harmonious pursuit of self-interest was great. He knew the doctrine of association of ideas from the earlier philosophers, especially through his friend James Mill. That doctrine represented that pleasure may be associated with, and so furnish motive power toward, almost any object or action, provided the object or act and the pleasure are experienced several times coincidently by the subject. And contrariwise with pains. This teaching is made plausible, as we know, by a very large number of facts, both from our accidental experiences and from formal education with its birch rod behind the door. Artful education is made possible through artificial association; things which are already interesting, that is, pleasant or painful, must be used in order to arouse interest in, and knowledge of, other matters to which we are originally indifferent. The original pleasures and pains are considered by the utilitarians to be few, and nearly uniform in strength throughout mankind, and the possibility of creating new interests in accordance with the educator's desire, by means of artificial associations, seemed unlimited. The Bentham school was therefore thoroughly hopeful of humanity's ultimate redemption from vice by education. "As respects pleasures," said Bentham, "the mind of man possesses a happy flexibility. One source of amusement being cut off, it endeavors to open up another, and always succeeds; a new habit is easily formed.[1] Consequently he supported financially a number of new, educationally reformatory projects — such as the 'Chrestomathic' school, Robert Owen's plans, and his proposed 'Panopticon' penitentiary, which was to be "a mill for grinding rogues honest and idle men industrious."

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[1] Works I, p. 436, quoted in Mitchell, *op. cit.*

He professed to believe there are no innate intellectual or moral differences between civilized man and savage;[1] in fact, this eighteenth century doctrine was held by John Stuart Mill, who said in his Autobiography that one of the main objects of his writings had been to show that the apparent differences between races, sexes and individuals were due to environment. One can easily see how the associationist psychology fostered such an 'a priori' belief. Association seemed to have an indefinite power of shaping men's mental states; and instead of the more cautious proposition that we will push the association explanation as far as it will go, before resorting to the mystical instinct or intuition formula, they drew the downright conclusion that natural mental equality is a fact, — that the association explanation *can* ultimately be made complete for all 'apparent' differences. Bentham was not always sanguine enough to hope for complete human perfectibility through education, however, nor did he hold unwaveringly to the theory of natural equality. Perhaps happiness, he wrote, is a chimera. "It may be possible to diminish the influence of, but not to destroy, the sad and mischievous passions. The unequal gifts of nature and of fortune will always create jealousies," etc.[2] The qualifications contained in this essay were not kept steadily in view, however, and he is found giving advice to the Terrorists of the French Revolution, as well as to certain South American countries, as if their background had been the same as his own.

THE 'SANCTIONS'

For purposes of government at present, and for education of the youth, the legislator must use *sanctions*, or artificial applications of pain and pleasure, to make duty and interest coincide. The sanctions are brought into view in the third chapter of Morals and Legislation; they are listed in four classes, — physical, political, moral and religious. The physical sanctions are the pleasures and pains which result from our spontaneous contacts with nature. The political are artificial rewards and punishments employed by the sovereign. The moral ' or popular ' consist in approval or disapproval from one's neighbors. The religious are the supernatural rewards or pains looked forward to. The legislator, he insists, must have an eye upon the operations of the two last-named sanctions as well as on his own, for they will be either powerful allies to him or powerful rivals. The artful use of these classes of motives for social welfare is the thread which connects all Bentham's works, for he was always trying to contribute toward "that (moral) system," as he described it, "the object of which is to rear the fabric of felicity by the hands of reason and law."[1] He distinguishes carefully the cases which are meet for political sanctions and those which had best be left to the other kinds, and he draws rules for the severity and kind of political threats. The Utilitarians' concentration of attention on the sanctions, in their treatment of moral and political problems, has often been criticized from the standpoint of human instincts, as by Leslie Stephen; for it is fairly clear, when we stop to think of it, that all men are not kept at their duty simply by fear of want or of the policeman. There are many binding, social ties in human nature, and the artificial sanctions are required only for a relatively few details. We have seen that some natural ties appear in Bentham's psychology, however, the ' simple pleasures ' of goodwill, amity and piety, and we shall find some other bonds in the psychology of James Mill.

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[1] Mitchell, *op. cit.*, p. 175.

[2] Influence of Time and Place on Legislation, Works I, pp. 193, 194.

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[1] Morals and Legislation, Ch. I.

CHAPTER VI

UTILITARIAN PSYCHOLOGY: THE TWO MILLS AND BAIN

We are fortunate in having available an edition of James Mill's Analysis of the Phenomena of the Human Mind (first published in 1829), which is of great value for our present purposes, — the edition of 1869, revised and annotated by John Stuart Mill, Alexander Bain and others. This edition shows how far these later Utilitarian psychologists had diverged from the original psychology of Bentham and the elder Mill. Bain was one of the last of the so-called associationists, and one of the first psycho-physical parallelists, — he was altogether a very prominent figure in nineteenth century psychology, writing from 1850 onward into William James' time.

James Mill's Analysis of 1829 came eighty years after the psychological treatises of Hume and Hartley. From both these authorities, especially Hartley, Mill drew much of his doctrine, which provided the Utilitarian philosophy with a definite and simple hedonist explanation of action, and a theory of education. All knowledge is considered to be built up from simple sensations by means of association, and all motives in the same fashion are derived from the added dynamic character of sensations in being pleasant or painful. He takes up the various classes of higher mental processes and motives, and attempts to show how they are all built from these sensational elements. More than half the work is occupied with the theory of motives, and it is of this part that we shall try to give an intelligible sketch.

The Mechanics of Association

Sensations are the beginning of everything; they are smell, hearing, sight, taste, touch, those of the muscles, alimentary canal and other organic sensations. In recent years neurologists have made more refined classes of sense-organs, and the association theory has so much the less work to do. The Mills and Bain attached considerable importance to our obscure and unlocalizable sensations, from internal sense-organs in surfaces, muscles and glands; these they connected with emotional consciousness a little in the fashion of the James-Lange theory.[1]

Now every sensation, says Mill, leaves a trace or copy or image, which can be aroused after the object that caused the sensation is gone. After seeing the sun, for example, the subject can shut his eyes and still have an experience very much like seeing the sun. The copy or trace thus left is the simple 'idea.' Bain thinks it is correlated with ' tracks ' left in the brain by the sensation. Ideas are derived only from sensations, according to these psychologists, and are never innate or inborn.

So we come to the principles governing association of ideas. The order in which ideas come up in our mind is not, as Hobbes said, "so casuall" as it seems. Ideas come in the order in which the original sensations occurred, which is either synchronous or successive.[2] The complex idea of a man is composed of ideas from a number of sensations which we have had synchronously; the ideas composing a verse or prayer are associated successively, and can scarcely be recalled out of the customary order.[3]

Of course not all sensations felt together leave enduring associations of ideas. Some impressions are quickly forgotten. What are the causes of tenacity? The strength of an association, says the author (meaning certainty, permanence and facility of recall), depends on the vividness, the frequency and the recency of the associated sensations. Vividness is chiefly a matter of pleasure or pain; a single association may thus be burned in, as with persons who cannot bear the sight of a surgeon who has performed a painful operation upon them, although they feel the strongest gratitude toward him. The strengthening effect of frequency is abundantly illustrated in all our learning, in language, arithmetic, occupations, what not. We are most certain to remember the chain of words or acts that we have gone over most often.[1]

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[1] E. g., Mill, Analysis, I, pp. 38, 47–50.

[2] *Ibid.*, Ch. III.

[3] Psychologists have always disagreed as to the ultimate principles of association. Aristotle, we remember, had suggested contiguity in time and place, similarity and contrast. Hume stated the laws to be contiguity, causation and resemblance. Mill's attempt to reduce them all to contiguity seems unsuccessful, and Bain concluded there are just two cases, contiguity and similarity (including contrast under similarity).

In many of our firmly-established associations, Mill goes on, when an antecedent idea is considered of no interest but the consequent idea which it introduces is very important, we 'forget instantly' the first idea, in associative recalls, and so the course by which we reached the interesting consequent will often be unknown to us. We will call it an 'unconscious inference.' Such is the case with the conventional signs, — words or letters, which impart to us interesting news; and with visceral sensations, which are associated with emotions. Hartley also had stressed this dropping from consciousness of associating links, as the links become very familiar and J. S. Mill and Bain dwell upon it as a fact of the first importance. We shall find, in several connections, that it is a fact of the greatest importance and that their notice of it goes far to make their psychology a true one.

Some theory is presented in this chapter both by father and by son, as to the limits of possible associations.

> It seems to follow from the universal law of association, says John Mill, that any idea could be associated with any other idea, if the corresponding sensations, or even the ideas themselves, were presented in juxtaposition with sufficient frequency. If, therefore, there are ideas which cannot be associated with each other, it must be because there is something that prevents this juxtaposition.[2]

Then he goes on to explain and amplify his father's theory on these limits. Impossibility of experiencing the sensations together, as the taste of asafoetida along with the taste of sugar, is one condition but not a sufficient one, since "We are but too capable of associating ideas together though the corresponding external facts are really incompatible." (That is, we draw erroneous conclusions or inferences.) Hence the other condition of impossible association is that the one idea either contains or calls up by association the idea of the absence of the other. This little point is a clue to their belief in the great possibilities of education.

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[1] Our belief in the external world and in its characters of extension, form and so on, Mill ascribes to invariable and inseparable associations of experiences. His son considered this analysis to be the great triumph of the book (*Ibid.*, Introduction, I, pp. 91 ff.).

[2] *Ibid.*, I, p. 98.

It would be of considerable advantage to us if we could make ourselves familiar with James Mill's theory of knowledge and reasoning, and the deviations from it of his son in the Logic; but these are large enterprises. Suffice it here to notice that association of ideas derived from sensations supplies James Mill with all the apparatus he needs for all varieties of cognition, and his son with most of his logical equipment (along with a few principles of logical necessity which he could not quite account for in Humian fashion). The immense rôle of language is recognized and stressed, and justly so.

PLEASURE, PAIN AND MOTIVES

We proceed with the mechanics of pleasure and pain in motives, which occupies most of the second volume. Some sensations ("probably the greater number") are indifferent; others are pleasurable or painful. The difference is known only by feeling, it is a question of whether the subject would end or prolong or simply neglect the sensation, if he had the power to choose.[1] All the senses contain these three classes. (The annotators remark that sensations are not simply either pleasurable, painful or indifferent; the same sensation, in different degrees of intensity, may vary from pleasant to painful, though the *quality* or knowledge-giving element in it remains the same and can be separately attended to. This is one of the puzzles with which the theory of pleasure-pain still has to deal.)

Now ideas of the events which are constant antecedents of pleasurable or painful sensations, and hence are supposed to be causes of them, are associated with the ideas of the pleasurable or painful and intrinsically interesting sensations. By manifold associations we become aware, not only of immediate causes of our interesting experiences, but also of remote causes; of the processes of food supply, as well as of the food immediately before us; of the musician and his hire, as well as of the violin which gives forth the pleasant sounds. These causes, of course, are much more numerous than the ultimate sensations (utilities or disutilities), and since some of the remote causes, like money, present greater problems than do the immediate causes once we have money, the remote causes are apt to occupy our attention more than the immediate causes.[1] Money is useful only for the pleasures it will obtain, yet by constant association of it with various pleasures and states of relief, it frequently comes to be sought as an end in itself.

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[1] Mill, Analysis, II, Ch. XVII.

His Analysis of Human Motives

An idea of a pleasure is a *desire*, says Mill, and the idea of a pain is an aversion; but at that stage neither is a motive (Ch. XIX). A Motive is the idea of a pleasure associated with the idea of an action of our own as its cause (Ch. XXII). So we come to his interesting catalogue of motives, and analysis of them into sensational elements (Chs. XXI–XXIII). The motives are classified according to the remote causes of pleasurable and painful sensations, under the following heads: Wealth, power, dignity, our fellows, the objects called sublime and beautiful, — and their contraries. The first three are all means of procuring pleasure through other men's services. Power does this chiefly through fear, and is in some instances much more extensive than wealth can possibly be. Dignity secures respect and services through eminence in knowledge and wisdom, as well as in wealth and power.

> It is to be observed, he says, That Wealth, Power, and Dignity, derive a great portion of their efficacy, from their comparative amount; that is, from their being possessed in greater quantity than most other people possess them.[2]

He shows in numerous other passages also that he is fully sensible of the strong motive force of emulation, but clearly he regards it as arising from the mathematical advantage of superiority, not from instinctive rivalry.[3] Our fellows are the origins of ' affections,' and hence of motives of the greatest influence; the distinguishable cases being friendship, kindness, family, country, party, mankind. But he observes,

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[1] Mill, Analysis, II, Chs. XVIII, XIX.

[2] *Ibid.*, II, p. 213.

[3] It may be of interest to compare Hartley's classification of pleasures and pains (1749) which is almost as crude as Bentham's: "The pleasures and pains may be ranged under seven general classes, viz., 1. Sensation; 2. Imagination (beauty or deformity); 3. Ambition; 4. Self-interest; 5. Sympathy; 6. Theopathy (contemplation of the deity); 7. The Moral Sense. Observations on Man, Priestly's edition of 1775, Introduction, p. ii.

> How few men seem to be at all concerned about their fellow creatures! How completely are the lives of most men absorbed in the pursuits of wealth and ambition! With how many does the love of Family, of Friend, of Country, or Mankind, appear completely impotent, when opposed to their love of wealth, or of power! This is an effect of misguided association, which requires the greatest attention in Education and Morals.[1]

Let us notice briefly his analyses of parental affection and of the moral sense, as indicative of his method. First, in parental devotion there is an unusual degree of general human sympathy, which is due to the associative revival of our own affective feelings by the observation of pleasure or pain in another person. A parent is led by circumstances to give great attention to providing satisfactions for his child, and hence he sympathizes with the offspring more frequently than with other persons. The reflection of the child's good or bad behavior onto the parents, in the public mind, is an obvious concern to the parents. The vivacious expressions of children are unusually favorable to exciting sympathy. The perfect dependence of the child on his guardians calls up frequent imaginings in the parent of the pains which would occur to the little one upon any relaxation of the parental care; and the idea of power over another person has become agreeable by other associations. Again, we imagine in lively fashion the pleasures which our acts of beneficence afford and so when we have frequently benefited any creature, whether a fellow man or a lower animal, that creature becomes an object of affection to us. That these and similar associations make up parental affection is demonstrated, he thinks, by the fact that just as strong affection may be developed for an adopted child as for one's own offspring, and not infrequently, for various reasons, people care nothing for their own children. Family affection, he says, is markedly deficient in families of extreme poverty or of very great opulence, because of the unfavorable associations which are afforded by these situations. In the mother there are the peculiar associations of sensations in gestation and nursing, along with her knowledge that the infant soon connects her with all the pleasures it is capable of enjoying.[1]

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[1] Analysis, II, p. 215.

Bain notes that several other sensational elements must be considered, as of touch in folding and embracing, the sensibilities of the tear glands, of the throat or larynx. "The pleasure of Tender Feeling must therefore be pronounced to have an independent standing in the sentient framework, although susceptible of being analyzed into the primary pleasures of the senses, together with the influence of association," says Bain.[2]

The so-called Moral Sense, or regard for the virtues of Prudence, Courage, Justice and Benevolence, is analyzed exhaustively in one of the final chapters (XXIII), and it boils down to original associations of sensuous and material advantage to the agent himself from his own prudence and courage, and from the virtuous conduct of others; also to revivals of pleasant feeling at the perception of the same advantages to others from the practice of virtue in general. The motives to benevolence are not confined to the hope of reciprocal benefits in kind; they include the powerful incentive of praise from our fellows. Praise is valued originally for the disposition it creates, in widening circles, among other people to render us services, but by constant associations, as in so many other cases what was originally means to an end becomes sought for its own sake, and the full course of the association is forgotten by the agent. Such is the case in the inordinate love of fame — which is often seen — and in the desire for posthumous praise, or merely to be praiseworthy, which are often strong enough to induce a person to sacrifice his life. Mill notices that Adam Smith expatiates on this last-named motive (praiseworthiness) but he thinks Smith did not successfully analyze it.[3] He is fully sensible of the great part which social approval plays in the regulation of all human conduct, from the nursery onward, and he realizes the necessity of discriminating use of it:

> When Education is good, no point of morality will be reckoned of more importance than the distribution of Praise and Blame; no act will be considered more immoral than the misapplication of them. They are the great

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[1] Mill, Analysis, II, Ch. XXI, sec. 2.

[2] *Ibid.*, II, p. 232.

[3] *Ibid.*, II, pp. 294–298.

> instruments we possess for insuring moral acts on the part of our Fellow-creatures; and when we squander them away, or prostitute those great causes of virtue, — we do what in us lies to lessen the quantity of Virtue and thence of Felicity, in the world.[1]

Bain adds a long note (pp. 302–307) saying that other factors must be used to account for the other-regarding social virtues than associations of personal egoistic interests. He stresses the influence of sympathy, the essence of which is "that the sight of misery in others prompts us, irrespective of our own interest, to enter into, and to relieve, that misery." But sympathy is "not an ultimate law of the mind." It is just one case of "the tendency of every idea to act itself out, to become an actuality, not with a view to bring pleasure or to ward off pain — which is the proper description of the will — but from an independent prompting of the mind that often makes us throw away pleasure and embrace pain."[2] Bain's stress on the *Idee fixe* was doubtless one of the early chapters in the history of that vague doctrine of 'ideomotor action' which has cropped up in all manner of anti-hedonist schools. At this point he properly emphasizes the effect of habits which were acquired originally under the governance of pleasure-pain, which influence, as we have seen, James Mill had not neglected.

The Will

A brief notice of these three authors' discussions of the Will will help us with some parts of the modern dissection of motives (Ch. XXIV). James Mill's account is essentially that of Hartley, and the main points are agreed to by his son and Bain. The Will to them is the state of mind immediately preceding an action, — therefore the cause of the action. Now some actions, says Mill, follow immediately upon sensations; these are what are now called reflexes, or simple instincts. Sneezing, breathing, dilation of the pupils, movement of the internal muscles, etc., he mentions as examples. From these involuntary sensation-movements or reflexes are derived by association, he thinks, actions following ideas. The idea of the pain or pleasure which resulted from an act is associated, by contiguity, with the idea of the sensation which gave rise to the act; and so there comes about the possibility of repeating the act by recalling the idea of it without experiencing the original stimulating sensation. Children at first wink their eyes only involuntarily, from painful contacts with the eyes; but they learn to wink at the idea of pain, suggested by the threat of a contact.

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[1] Mill, Analysis, II, p. 300.

[2] *Ibid.*, II, p. 305.

In similar fashion, observation of the performance of an act which we have once performed from sensations is very frequently a stimulus to imitation of the action.

"There is more or less of a propensity to imitation in all men," Mill says, and gives numerous examples. But by propensity he does not mean what we call instinct; he has expressed himself elsewhere on that odious synonym for intuition or innate idea:

> When Professor Stewart, therefore, and other writers, erect it (belief in the future) into an object of wonder, and tell us they can refer it to nothing but instinct; which is as much as to say, to nothing at all; the term instinct, in all cases, being a name for nothing but their own ignorance; they only confessing their failure in tracing the phenomena of the mind to the grand comprehensive law of association.[1]

The original reflexes and the quasi-automatic acting-out of ideas, such as laughing and imitative yawning, are all involuntary. Curiously enough he gives as an example of involuntary action the same illustration which William James used to refute the hedonistic theory of action:

> Shedding tears at the hearing of a tragic story, we do not desire to weep; laughing at the recital of a comic story, we do not desire to laugh.[2]

To Mill there was no paradox here; it is the voluntary actions, those directed toward a conscious end, which most need explaining, and these may be explained, he thought, by the principles of association with pleasure and pain.

In this case of voluntary action, the idea of a pleasure arises through some course of association; such a represented pleasure is *ipso facto* a desire. It in turn recalls by association the idea of an act of ours which would procure the pleasure, and that idea is immediately connected with a stored-up copy of the sensation which reflexly produces the action. Such associations are formed only

[1] Mill, Analysis, I, Ch. XI, pp. 375, 376.

[2] *Ibid.*, II, p. 350.

slowly, and we do in fact only very gradually acquire voluntary command over our muscles through practice, which strengthens the associations or habits that make up the learned acts. Now from these chains of associations, Mill and Hartley often point out, the less interesting links disappear from consciousness, and so when William James asks himself why he is writing, he can trace no introspective cause except that he had begun and finds himself still writing. Bain adds some observations concerning the relation of the emotions to action, the learning process, and illustrations of the fixed idea principle, all of which link up Mill's account with modern views.

Assuming that various motives are developed, then, by experiences of pain and pleasure and recollection of them and the means they were obtained by, Mill goes on to the subject of conflict of motives. The relative strength of different motives toward determining our action, depends on the principles of frequency, vividness, etc., of the associations which make up the motives. An imprudent action is one in which the better motive (that which will lead to a final net gain in pleasure) is not strongly enough intrenched; the person has insufficient knowledge, or has it not sufficiently impressed upon his character (Ch. XXII). J. S. Mill's note explains definitely:

> What makes the one or the other (motive) more powerful, is (conformably to the general laws of association) partly the intensity of the pleasurable or painful ideas in themselves, and partly the frequency of repetition of their past conjunction with the act, either in experience or in thought. In the latter of these two consists the efficacy of education in giving a good or a bad direction to the active power.[1]

We find no mention of a possible felicific calculus in James Mill's psychology. His account of volition shows that the agent is pushed from behind by the associative mechanism, rather than lured into action by a quick calculation of all its sensuous consequences to him. But these two conceptions become one, when we remember that part of the associative mechanism may become unconscious, according to Mill, and so the agent may not be able to trace his action introspectively to considerations of pleasure or pain, although it is in fact determined by the original reflexes or pleasures, plus their accretions of associations, — by ‘calculation,’ that is, in the sense of the rattling off of a chain of associations.

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[1] Mill, Analysis, II, p. 262 note.

TRANSFER OF INTEREST

We may now get a clearer light on the Utilitarian psychology as a whole by considering the net advance of John Stuart Mill over his father and Bentham, as to the doctrine that pleasure and pain are the instigators of all action.

One of the principal changes made by John Mill in the utilitarian theory, it will be remembered, was his disavowal of Bentham's dictum that "amounts of pleasure being equal, push-pin is as good as poetry," and his admission of a hierarchy among pleasures.[1] Jevons followed him in this respect,[2] but Bain considered the concession a mistake,[3] and to the present writer the question seems far from closed. But putting aside the question of ultimate good, we find that the younger Mill was at one with the earlier associationists in emphasizing some phases of the hedonistic account which are now usually ignored, but which give the Utilitarian psychology of motives a very different aspect than that in which it is usually presented.

In the first place, as we have seen, they conceded the existence of numerous innate reflexes which have the automatic character attributed to instincts, and which operate independently of any calculations of pleasure and of any foresight and pain. Examples are laughing, crying, sneezing, winking, continuing pleasant acts. Probably they underestimated the number of these ready-made automatisms, and doubtless Bentham's ‘simple pleasures’ make a poor list of instincts; but at any rate all the associationists did acknowledge several original behavior-tendencies.

In the next place, the coercive power of habit, in the face of changed conditions of feeling-consequences, and the related phenomenon of the *transfer* of motivating power and pleasure from an original pleasant *end* to the *means* whereby that end has been frequently sought, so that finally this motive will persist in compelling power even though the original pleasures have faded away, was a cardinal point in the associationist doctrine ever since Hartley. It underlies the theory of indefinite human educability, which, as we have seen, was strenuously expounded by Bentham; and J. S. Mill never tired of exhibiting this psychological principle and relating it to ethical theory. The very word 'transfer,' which is now the favorite term of the Freudians for the same phenomenon, was frequently used by John Mill and by Bain, while the essential facts were frequently adverted to by James Mill, Hartley and even Bentham.[1] James Mill usually illustrated it by the acquired passion for money, but he also taught that the love of power, dignity, fame, and persons could be similarly transferred, so that a man will die for fame or for a beloved person, either of which was originally valued by him as a means to some pleasurable ends, but have become ends in themselves.[2] In his Logic,

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[1] See his Utilitarianism, pp. 17 ff.

[2] Theory of Pol. Econ., p. 25.

[3] J. S. Mill, A Criticism (1882), p. 113.

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[1] E. g., the statement quoted above, "A new habit is easily formed"; and Bentham's advocacy, in The Rationale of Reward, of daily wages to all officials of the state, for the sake of inculcating pleasant associations with the scene of their duty.

[2] See Vol. II, pp. 215, 219, 266, and elsewhere. Cf. Hartley: "It is also worthy of observation, that riches, honor, power, learning, and all other things that are considered as means of happiness, become means and ends to each other in a great variety of ways, thus transferring upon each other all the associated pleasures which they collect from different quarters. . . ." Human Nature, Priestley's edition of 1775, pp. 292–297.

We select two passages out of many from the writings of John Mill:

"This portion of the laws of human nature is the more important to psychology, as they show how it is possible that the moral sentiments, the feelings of duty, and of moral approbation and disapprobation, may be no original elements of our nature, and may yet be capable of being not only more intense and powerful than any of the elements out of which they may have been formed, but may also, in their maturity, be perfectly disinterested: nothing more being necessary for this, than that the acquired pleasure and pain should have become as independent of the native elements from which they are formed, as the love of wealth and of power not only often but generally become, of the bodily pleasures, and relief from bodily pains, for the sake of which, and of which alone, power and wealth must have been originally valued. No one thinks it necessary to suppose an original and inherent love of money or of power; yet these are the objects of two of the strongest, most general, and most persistent passions of human nature; passions which often have quite as little reference to pleasure or pain, beyond the mere consciousness of possession, and are in that sense of the word quite as disinterested, as the moral feelings. . . ." — Note in J. Mill's Analysis, Vol. II, p. 234.

"To do as one would be done by and to love one's neighbor as oneself constitute the ideal perfection of utilitarian morality. As the means of making the nearest approach to this ideal, utility would enjoin, first that laws and social arrangements

Mill also criticizes the Bentham school of politics for considering rulers to be governed wholly by narrow self-interest. Rulers' actions are determined, not only in some degree by a sense of duty and philanthropy, but quite largely by convention and tradition, Mill says, "and no one will understand or be able to decipher their system of conduct who does not take all these things into account."[1] The Utilitarians, therefore, were not at a loss for an answer to the old objection to hedonism, that people are constantly doing things in which they have no pleasure. We may find that their answer was inadequate, but at this stage we may absolve them from the imputation of ridiculous blindness to ideal motives, which has been foisted on them by their more 'idealistic' ethical opponents.

No one who has considered the facts of association or of habit-formation, moreover, should hold that the appearance of 'artificial simplification' is any indication that the associationist-hedonist explanation of conduct is a false one.[2] So is the explanation that water is made up of two gases an artificial simplification; and any psychological analysis of the full-grown human impulses must be unnaturally simple-appearing or else useless. The attractiveness of McDougall's scheme of elementary instincts, as compared with the associationists' scheme, has been partly in the congenial and life-like aspect which the former presents; those

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should place the happiness or (as speaking practically it may be called) the interest of every individual as nearly as possible in harmony with the interest of the whole; and secondly that education and opinion, which have so vast a power over human character, should so use that power as to establish in the mind of every individual an indissoluble association between his own happiness and the good of the whole, especially between his own happiness and the practice of such modes of conduct, negative and positive as regard for the universal happiness prescribes; so that not only he may be unable to conceive the possibility of happiness to himself consistent with conduct opposed to the general good, but also that a direct impulse to promote the general good may be in every individual one of the habitual motives of action and the sentiments connected therewith may fill a large and prominent place in every human being's sentient existence." — Utilitarianism, pp. 38, 39. Cf. Logic, Bk. VI, ch. ii, sec. 4.

[1] Logic, Bk. VI, ch. viii, sec. 3.

[2] Wesley Mitchell, for instance, thinks that no more need be said to discredit it (Bentham's Felicific Calculus, p. 183), and many other refutations are based on this common-sense incredulity.

‘ instincts ’ of his are very much like the adult motives which we recognize from introspection, and which to introspection appear simple and unanalyzable. Contrariwise, because we so often find ourselves reasoning we incline to accuse McDougall of oversimplification because he does not make reason an element in motives. Of course the real question between McDougall and the associationists is whether the units McDougall uses are really innate units which are not due to individual experience, and which cannot be broken up by artificial associations. If it should prove that the true instinctive cores of human motives are much simpler than the functional psychology has represented, and that these units are organized by experience on associative principles, then we may find the associationists to be nearer right than the functionalists.

It is hoped that we have now a more accurate idea of what utilitarian or hedonist ‘ intellectualism ’ was, so far as motives are concerned, than we should gain by reading merely the current social psychologies, or secondary works. We shall turn next to the more recent discussions of these psychological questions, and we shall not neglect to inquire how far the dynamic psychology of the Mills in its larger aspects, has actually been exploded. The result will contribute something toward an evaluation of the psychological foundations of our modern economic theory, which as our critics have said, seem to be largely identical with the assumptions underlying the classical economics.

PART II

THE PSYCHOLOGICAL ANALYSIS OF MOTIVES

CHAPTER VII

THE NEWER POINT OF VIEW IN PSYCHOLOGY

The Physiological and Behavior Emphasis

We pass now to more recent theories on the nature and relationship of our motive-elements, — instincts, reason and so on.

To account for our selection of material from the vast archives of scientific psychology, a few remarks may be useful as to the newer point of view which has been coming into this science since the days of the associationists, — namely, the biological, physiological, or behavior point of view.

The older psychologists held that when one ‘ idea ’ (i. e., mental state) is uniformly found immediately to be followed by another ‘ idea,’ the first is to be considered the cause of the second; and that the principal task of psychology was to seek for such sequences.[1] Many of them, moreover, believed that ‘ mind ’ has a ghostly existence of its own, only partially tied down to the body; and consequently their chief concern was with introspective ‘ analysis of consciousness.’

The increasing modern tendency, however, is toward the hypothesis that "mental action," as William James expressed it, is "uniformly and absolutely a function of brain-action [or rather, let us say, of the whole neuro-muscular response-mechanism], varying as the latter varies, and being to the brain-action as effect to cause."[2] The old doctrine of interaction, which held that ‘ the mind,’ by its volitions, frequently suspends the physico-chemical laws of the body, is now defended by but few psychologists, because it conflicts with too many of our more firmly established beliefs concerning the conservation of energy in the universe at large, and also because the proportion of facts about mental life which fits the above mechanistic hypothesis is constantly increasing.

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[1] See Mill's Logic, Bk. VI, ch. iv.

[2] Briefer Course, p. 6.

Many authorities still prefer not to speak of neural action as the ' cause ' of mental phenomena, to be sure; they use such terms as psychophysical parallelism or the double aspect of experience; but nearly always they concede that, on the one hand, no consciousness ever occurs without a certain concurrent nerve-action, but on the other hand, numerous nerve processes do occur without effecting any immediate modification of consciousness. These latter unconscious nerve processes, however, often do help to determine later states of consciousness in a way quite mysterious to the subject, as when a person in hypnosis remembers details of a strange house which had escaped his waking attention, or a neurotic suffers an obsession on account of some long-forgotten experience, or when the name we had vainly tried hours ago to recall suddenly slips into our mind. It becomes probable, in other words, that any momentary consciousness is fully explicable only by the history of the subject's nervous system, and not by any record of his past mental states.[1]

There is, therefore, a growing disposition to regard the formulation of a mental function which runs in physiological terms, as a more fundamental explanation than the merely ' psychological ' statement which confines itself chiefly to introspective appearances or to gross bodily behavior. From this point of view, a

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[1] Titchener, A Beginner's Psychology (1915), p. 96: "It is quite certain that *nervous forces or tendencies* — think of the force of habit! — *may guide and direct the course of our thoughts, even though they do not themselves contribute to thought*, even though (that is) they have no sensory or imaginal correlates," p. 248: "The actor, oftentimes, cannot make his action plausible, even to himself, when he tries to state his ' reasons ': but the sympathetic historian can trace the influence of tendencies which had no mental correlates, and whose existence was therefore unsuspected by their possessor." Woodworth, Dynamic Psychology (1918), p. 35: "Consciousness is not a coherent system, because much of the process that is partly revealed in consciousness goes on below the threshold of consciousness."

A strong modern champion of interaction is McDougall, Body and Mind, who almost converted Stout from parallelism. See the latter's lengthy examination of the two hypotheses in his Manual of Psychology (3d edition, 1913), Introduction, Ch. III.

Some of the behaviorists think they solve the riddle of mind and body by "Epistemological Monism," i. e., the doctrine that consciousness *is* the response itself. See James, Essays in Radical Empiricism; and Holt, The Freudian Wish, pp. 172 ff., and The Concept of Consciousness. As Santayana points out, this is merely an inverted metaphysical idealism. If it be objected that our inability to define concharacterization of any given instinct, for instance, in terms of the stimuli and the reflex circuits, etc., involved in the response, is more thoroughgoing and fruitful than any description of the emotional excitement which attends the instinct's exercise, or any statement of the end toward which the creature feels himself to be striving. It is believed that the nerve processes underlying the psychic functions, besides being more continuous and fundamental than the latter, are also more open than these to many-sided, dispassionate examination by ocular, chemical and other tests, so that the psychological laws which use physiological analysis are more difficult for myths to inhabit than those which run in terms of unstandardized ' ideas ' and ' purposes.'

The ' behavior ' movement extends this newer attitude to the proposition that psychology's chief value is to explain how and why people act, to the end that their actions may be more intelligently controlled. Experiments with carefully arranged stimuli, and observations of the responses and their physiological mechanisms, are mainly relied on for such a science, and evidence from the subject's consciousness is much less relied upon.

Place of Animal Psychology

This shift in emphasis explains the great amount of attention now given to comparative and ' animal ' psychology; for if we do not confine ourselves to introspective evidence, the evolutionary or genetic approach has the same advantages, in the way of beginning with simpler problems, in the complex subject of motives that it has in biology or physiology. The responses of simple organisms to a few stimuli in their environment are motives of a simple kind. Some behaviorists, as Watson and Holt, are for discarding all subjective evidence; but the moderate and more general view is that consciousness is a valuable indication of many physiological states and responses which are too obscure to be observable by other methods at present.[1] We do desire, as

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sciousness in terms other than itself throws doubt on the validity of all physiological psychology, the reply is that our knowledge of the conditions of its production, as in the case of electricity, constitutes a partial acquaintance with its nature which is as real as is our acquaintance by introspection, and which now promises more power to control mental phenomena.

[1] Cf. Woodworth, *op. cit.*, Ch. II.

Jevons said, to maximize the agreeable states of feeling, but the behaviorists would retort that this is only to say that we want what we want, which is what we can be seen by an outside observer to choose.

It will be apparent that these methods and kinds of evidence have always been used in some degree by all psychologists. Some physiology and some reference to the lower animals, some formulation of stimulus and response, is familiar since Aristotle; and Bain, Spencer and William James especially used quite shrewdly all the physiological knowledge which was at their disposal. But it remains true that comparative and evolutionary psychology has become especially prominent in the last generation through such leaders as Baldwin, Hobhouse, McDougall and Dewey; and the strict attention to neural mechanisms has been peculiarly characteristic of a group of workers inspired by James, such as Thorndike, Yerkes, Watson, Dunlap, Woodworth, and Holt. The present writer believes, in accordance with the considerations set forth above, that close attention to the biological aspects of motives is the most effective preventive of myth-making, and so we shall use evidence and concepts which are more familiar to the two last-mentioned groups of authorities, than to the hitherto dominant but more preponderantly introspective schools of Wundt, Stout and Titchener. It is not so much a matter of conflict between these classes of authorities, as of emphasis and proportion.

The Freudian school, so far, is strongly introspective and out of touch with modern exact psychological methods, but its own methods and conclusions are so suggestive on the subject of motives that we are bound to consider them carefully.[1]

Any reader who is interested in the sociological writers, such as Tarde, Le Bon, and Giddings, will notice that McDougall's is the only professed ' social psychology ' to which we refer. We do not doubt the great value of these other social psychologies, but the chief need of investigation at present appeared to us to be on the fundamentals of individual motives, which are the instincts and the principles of learning. What the environmental and social factors are, which do normally contribute to our characters, make a large subject for further investigation, and in that connection these sociological works could not be ignored. All of them, however, need some pruning by the results of the researches we have consulted, for they have used assumptions concerning instincts, habits, reason, and feeling, which are obsolete in present-day psychology, or are fast becoming so.

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[1] Some interesting observations on the above topics are contained in H. W. Chase's "Psychology and Social Science," Am. Jour. Psy., 28: 216–228 (1917). He argues that social science must turn to the behaviorists, in the moderate sense, for a solid psychological foundation. See also E. S. Abbott, "The Biological Point of View in Psychology," Psy. Rev. 23: 117–128 (1916). The first two lectures of the excellent little book by Woodworth above mentioned give a brief and impartial account of the various movements in psychology. Woodworth emphasizes that the

OUTLINE OF THE ' BEHAVIOR SITUATION '

Now let us recall the outstanding facts concerning the "behavior situation," as Professor Holt calls it. The living organism, be it amoeba or man, is a mechanism which manufactures from its food certain organic chemical compounds which are analogous to explosives, in that when they are suddenly disintegrated by appropriate stimuli, they release a quantity of energy which is large in proportion to the energy of the stimulus. These compounds are stored by nutrition in all the living cells, including the neurons or nerve-cells, though it is the muscle-cells which specialize in the discharge of the kinetic energy which produces gross bodily movements. The nervous system (or its analogues in the lowest creatures) coördinates the activities of the body — of its separate parts with each other, and of the whole body with its environment — by means of a multitude of reflex arcs, or reflex nerve circuits.

The reflex circuit in its simplest form is a sensory neuron or nerve, terminating in an end-organ or receptor (as in the eye, for

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aim of the science is and always has been to understand the "workings of the mind," i. e., "how we learn and think and what leads people to feel and act as they do." It is a question, he says, of the dynamics, or of the chains of cause and effect. Watson expounds the view that psychology's mission is only to promote the control of behavior, in his Behavior, An Introduction to Comparative Psychology (1914), and in "An Attempted Formulation of Behavior Psychology," Psy. Rev. 24: 329–352 (1917).

example) which contains a substance sensitive to a particular objective stimulus, such as light-waves or sound-waves or certain chemical or tactual effects. Upon the reception of a stimulus, the sensory neuron discharges some of its liberated energy into a connective neuron in the central nervous system (spinal cord and brain), and this impulse explodes the central neuron which in turn gives an impulse to the motor neuron that is in contact with the muscle-cell. Probably no circuit as simple as this actually exists in the human body, for the central nervous system is a maze of billions of neural fibers which almost bewilders the physiologists. Between the sensory and motor neurons there may intervene a number of central cells, as the latter usually have several branches and are links in several systems at the same time. Thus the impulse from a single sense-organ may be transmitted simultaneously to several motor nerves or to but one out of a group of possible destinations. Conversely, several stimuli may be delivered to one motor tract, reinforcing one another. But in spite of such complications, all behavior is believed to be analyzable into combinations of reflex circuits identical in principle with the simple one above described.

These ramifying circuits determine the creature's behavior according to the stimuli which reach him; taken together they constitute his ' action system.' The location and functioning of the sensory and motor neurons are relatively fixed and unchangeable, like fingers and toes, and some of the central connections are too, as those of reflexes such as the knee-jerk or sneezing. Every organism has some complex circuits provided ready-made by heredity which take care of him in the situations usual to his kind; these are the machinery of his reflexes and instincts. And all organisms are capable of some amount of learning, that is, of acquiring responses in addition to, or superseding, their instinctive actions in certain situations. Learning evidently involves the forming of new connections within the central nervous ' exchange.' The extent and peculiarities of these instinctive mechanisms, and the principles of learning or of habit-formation, are the fundamental problems of modern psychology.

Relation of Behavior to Consciousness

But how are we to connect facts of this nature with the facts of consciousness? Since we do not believe in losing sight of the evidence from introspection, we consider it advisable to link the two together as intelligibly as possible. We must beware of making important results depend on any particular theory, because no theory is well established as yet, but it will be helpful to us if we have a tentative working hypothesis. The most probable hypothesis seems to be (1) that consciousness is made up entirely of sensations and images; (2) that sensations are constantly correlated with definite responses or reflex circuits; and (3) that images are correlated with these same responses when the latter are stimulated to a low degree of activity, — when they are incipient or implicit responses, as some of the behaviorists would say.

Let us expound and defend this hypothesis a little further. We assume, it is seen, the general doctrine of sensationalism, i. e., that sensations are the original source of all mental experience. That question is highly controversial, but Titchener brings a host of other authorities to our support.[1] Now it is no longer plausible to psychologists that a neural impulse merely comes to the brain from the sense-organs, produces there a sensation, and then lingers in some ante-room until the brain decides what to do about it. As Watson says:

> So far as we know no such thing occurs. The nervous system functions in complete arcs. An incoming impulse exerts its effect relatively immediately upon one system of effectors or another, as shown by inhibition, reinforcement, summation phenomena in the muscle in question, or by inciting wholly new effectors to activity.[2]

William James taught long ago that all consciousness is conjoined with some kind of complete reflex arcs or movement,[3] and this doctrine has become probably the most common one. The incoming, or afferent, impulse makes its way outward and thereby produces some sort of response, though not necessarily a response which can be detected by crude observation. The sensation-consciousness, therefore, is known simply to be a correlate of the whole response, not yet of any one part of it.

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[1] See his Experimental Psychology of the Thought Processes (1909).

[2] J. B. Watson, Behavior, an Introduction to Comparative Psychology (1914), p. 19.

[3] See Briefer Course, Ch. XXIII, on "Consciousness and Movement."

Some difficulty may be felt with the hypothesis, however, in the case of quiet thought. Where are the reflexes underlying this kind of consciousness? The answer is that thought is (as the sensationalist believes) a series of images, or faint reproductions of past sensations, intermingled always with some actual sensations from present stimulations of the thinker's body. Now we suppose, in common with Watson, Holt and others, that these ideas or rather images are correlated with slight innervations (initiated at some remove by peripheral stimulation and spreading thence by ' association ' within the central nervous system) of the central tracts and responses in muscles or glands, which innervations are not intense enough to bring about ' overt ' action, but which do cause tonicity or a slight tension and readiness to respond. Thus your thoughts which are verbal are accompanied (we assume) by slight responses of the vocal apparatus, larynx, tongue, etc. This tension causes many people to experience fatigue in the throat at hearing music, especially singing, and one always hears better a proper name after he has already pronounced and learned how to spell it. If you merely imagine the appearance of the sun, the slight response is presumably in whatever neuro-muscular system was active when you did actually see it in a contemplative attitude. If you are hungry and think of your favorite food, the incipient flow of saliva is easily detected. The evidence of this correlation of images with ' implicit behavior ' is still roundabout and fragmentary, but it rounds out intelligibly the view that *some* kind of response, or at least of neural activity, accompanies all consciousness, and it is acquiring considerable psychological authority.[1] It is really only the central nervous action which we assume to be indispensable to the production of sensations or images, we are not bound to any particular degree of incipient response. The usefulness of a hypothesis of the foregoing sort will become especially evident when we consider the problems of Reasoning.

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[1] See Watson, *op. cit.*, pp. 16 ff. He says "Where explicit behavior is delayed (i. e., where deliberation ensues), the intervening time between the stimulus and response is given over to implicit behavior (to ' thought processes '). . . . The larynx and tongue we believe are the loci of most of the phenomena." Cf. Holt, *op. cit.*, pp. 60 ff., 98 and Supplement. C. Judson Herrick, the eminent neurologist, also gives some support to the view: "No part of the nervous system has any signif-

So much, then, for a bird's-eye view of the elementary apparatus of motives. The details, it is hoped, will become more intelligible as we proceed.

icance apart from the peripheral receptor and effector apparatus with which it is functionally related. This is true not only of the nervous mechanism of all physiological functions, but even of the centers concerned with the highest manifestations of thought and feeling of which we are capable, for the most abstract mental processes use as their necessary instruments the data of sensory experience directly or indirectly, and in many, if not all, cases are intimately bound up with some form of peripheral expression." (Introduction to Neurology (1915), p. 27. Cf. also Knight Dunlap, "Thought Content and Feeling," Psy. Rev. 23: 49–70 and his Outline of Psychobiology (1914); as well as E. C. Tolman, "Nerve Process and Cognition," Psy. Rev. 25: 423–444 (1918). Thorndike's view is similar. He says the observable motor responses "are soon outnumbered by those productive, directly and at the time, of only the inner, concealed responses in the neurones themselves to which what we call sensations, intellectual attention, images, ideas, judgments, and the like, are due." — Educ. Psy. Vol. II, p. 54.

CHAPTER VIII

INSTINCTS, APTITUDES AND APPETITES, IN GENERAL

Development of Theory

Probably an undue proportion of attention has been given to the human instincts, in discussions of motives or social psychology written within the last thirty years. A distinct reaction is setting in toward emphasis on the plasticity or teachability of human nature, which sets us so far apart from the lower animals, — an emphasis that was also characteristic of the association psychology. This newer associationism will be outlined in Chapters XI to XIII.

The prominence given to the instinctive elements in human behavior in recent discussions, however, calls for a critical evaluation of them; and indeed there are many points of social theory at which our present knowledge of instincts can well be used. More extended and definite use, we believe, however, must wait on advancement of the psychological theory. The reader is presumably interested chiefly in an enumeration of the original human impulses, but the problems presented by instincts in general must be faced before the value of any given inventory can be appreciated.

An historical account of the doctrines of instinct could be fitted quite neatly into Comte's theological-metaphysical-positive formula, particularly if we looked primarily at the inferences drawn from the phenomena of instinct. As to the phenomena themselves, and the supposed mechanics of them, there has been surprisingly little change in theory during the past three or four centuries. It has been believed all along that the instincts, both of the lower animals and of men, operate by means of cunning physiological clock-works, providentially provided, which cause a creature to make adaptive and appropriate reactions to the important objects in his environment.

The main dispute has always been on the *extent* of such automatic action; in other words, as to how much brutes reason and how far men are creatures of instinct. Descartes, of course, held that the lower animals are complete automata, and such has long been the popular view; but philosophers like Buffon, Erasmus Darwin, Helvetius and Hume championed animal lovers in their conviction that dumb brutes frequently act from reason just as do men, and that they have analogous pleasures and pains. "No truth," says Hume, "appears to me more evident, than that beasts are endow'd with thought and reason as well as men."[1] The Scottish philosopher Reid, as we have remarked, gave much attention to the human instincts, in the interests of his doctrines on intuitions of the moral sense, existence of the external world and the like. A follower of his, Thomas Hancock, M.D., published in 1824 a thick volume called An Essay on Instinct and its Physical and Moral Relations (London), in which the imperfect human reason is contrasted with the wonderfully accurate guidance of divinely provided instincts; and the existence of a moral instinct is inferred. Numerous illustrations of instinctive actions, brute and human, are there collected, many of them quoted from Reid. Pope's couplet appears on the frontispiece:

> For Reason raise o'er Instinct, as you can;
> In this 'tis God directs, in that 'tis man.

This contrast between rational or intelligent action, in which the agent utilizes the lessons of his past experience and 'puts two and two together,' or draws inferences, on the one hand, and blind automatic action, stereotyped or uniform for a whole species, clearly not learned from experience yet always tending to preserve the creature and his race, has therefore been a conventional topic for some centuries. Comparative psychologists are still far from agreed as to the extent of instinct in man and of reason in brutes, but careful observation of human phenomena will progressively answer the first question, and the light we are getting on the relations of learning and reasoning to instincts (which will be discussed in following chapters) will help to clear up the second.

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[1] Treatise of Human Nature (1739), Bk. I, pt. iii, sec. 16.

The associationist-utilitarian psychologists, it is well known, reacted strongly away from the instinctive or ‘ intuitive ’ line of explanation of mental phenomena and behavior. Theirs was a simple formula of knowledge and action determined by association of sensations. Yet all those writers, as has been shown above, did assume some instinctive equipment. The occasion of their reaction was plainly in the arbitrary metaphysical and ethical principles which the hypothesis of intuitive or instinctive knowledge had been used to support. James Mill's testy assertion that the name Instinct is a mere cloak for ignorance was made *apropos* the supposedly instinctive belief in the external world. The same Mill, however, used the substance of the instinct concept to account for numerous original unlearned simple reflexes of the body, and for the impulsive effects, in opposite directions, of all painful and pleasurable sensations. Bentham came nearer to the modern position when he admitted benevolence, skill, ambition and several others to be ‘ simple pleasures,’ for he was then saying in effect that people are impelled to these ‘ pleasures ’ for no ulterior motive, but simply for their own sweet sakes. John Mill was more hospitable to the doctrine of animal instincts, and he admitted that the association formula might have to be revised in that direction.[1]

Bain is, as usual, half way between James Mill and William James. He fully recognized the instincts and appetites as the original behavior equipment. He described the appetites of hunger, thirst, sex and so on, and he catalogued the instincts into (1) simple reflexes, such as breathing, sucking, heart action, (2) the mechanisms leading to walking, vocalization and general bodily control, and (3) the arrangements for expressing emotions, as in laughing, crying and general random motions. The "destructive and constructive" instincts he dismissed as important only in the lower animals.[2] His work on the emotions was very important;[3] many of his classes are the standard ones adopted by McDougall. He made original observations of newly-born lambs to decide questions of instinct, and so rejected the alleged instinct of imitation, yet the maternal and other social instincts never made much impression on him. He thought they were chiefly derived from associations of simple sensuous pleasures, and for this doctrine McDougall has frequent occasion to reproach him.

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[1] Logic, Bk. VI, ch. iv, sec. 4.

[2] A. Bain, The Senses and the Intellect (1855), Bk. I, chs. iii, iv.

[3] The Emotions and the Will (1865).

Mechanisms of Instinct

When we turn to the more exact characterizations of instinct which have resulted from modern researches, we find it agreed that the outstanding features are those that were noticed long ago. It is an ' untaught ability ' to perform a peculiar course of action in a certain definite external situation, which action *usually* promotes the survival of the individual or his species; an ability which is somehow transmitted by heredity, not acquired through the subject's experience, and whose hereditary nature is attested by the similarity of instinctive actions in all members of any animal species; and finally, instinctive action is performed, on the first occasion at least, without foresight of the utility it will have. This similarity within a species is not absolute, there are inborn differences of capacity just as there are differences in human nose-lengths; the instinct is the general behavior-character, as the nose is a general physical character. As Woodworth says, some cats are naturally better mousers than others, but all cats are more alike in their propensity to hunt mice than the similarity of their rearing would account for. Besides the various food-getting instincts, including sucking in human infants, those of locomotion, shelter-building, vocalization, reproduction and care of the young are familiar examples. We shall defer the matter of inventory, however, until we have inquired further into the general nature of an instinct.

The only rigid test as to whether a given action is really instinctive is repeated observations of similar and relatively skillful first performances by several members of a species, under conditions which preclude the possibility of the animals having learned the trick by practice or imitation. Such conditions exist when the instinct functions directly after birth, or develops spontaneously when the animal is reared in isolation. This test can be realized only in a few cases, and so there is still room for scepticism as to whether most of the supposed instincts are really transmitted through inheritable characters in the nervous system, or are carried simply by the group ' culture,' that is, by the younger members learning ways and technology from the older ones.

It is further pointed out, moreover, that many of the distinctive features of so-called instinctive behavior are due simply to peculiarities of the animal's organs, they are the necessary results of his gross bodily structures. It is ' instinctive ' to us to build houses of a certain size, and for birds to build theirs of another size and shape, largely because of the ways our bodies differ in size and shape from theirs. Our constructive, and possibly our acquisitive, ' instincts ' are clearly somewhat dependent on the structure of our hands,—the thumb being opposed to the fingers and so capable of grasping. Our language ' instincts ' depend partly on the structure of our vocal organs; and ' natural ability ' in music and art clearly is in part a function of the ear and eye. A genuine instinct is a matter of inheritable neural connections, which determine a specific response; it is not a matter of other inherited organs.

A third objection made to the orthodox theory of instincts is that observations in embryology seem to show that no neural connections forming reflex circuits are predetermined by heredity; the fibers seem to grow out at random, like the roots of a plant, and the responses of which a new-born animal is capable are apparently ' learned ' during its prenatal experiences. On all these grounds Professor Holt, for example, in his lectures disputed the existence of instincts in the usual sense of the term; and there have long been naturalists like A. R. Wallace who believe that the precocity in learning of young animals, and the possibilities for imitation, will account for all the facts of behavior without the assumption of instincts. The rather uncritical exploitation of instinct-doctrines by some of Darwin's followers, like Romanes, is to be charged in some degree with the reaction.

So far as imitation or learning after birth is concerned, enough trustworthy evidence, of the rigid kind mentioned above, has been collected by recent students of animal behavior so that doubt as to the existence of *any* instincts at all is absurd. To mention only a few examples, the flight, pecking and sexual behavior of birds have been proved instinctive, solitary insects of many species have been found to live the same typical and intricate lives when there is absolutely no possibility of imitation, or learning through trial and error; and specific typical reactions to hereditary prey and enemies by cats, guinea hens and other animals have been abundantly demonstrated.[1] That a large number of other behavior-series are instinctive is rendered probable by a multitude of less critical observations; but the anecdotes of the older naturalists must be accepted cautiously, since the writers often underrated the capacity of lower animals for learning.

It was formerly supposed that an instinctive act is performed perfectly on the first occasion, but modern students all find the first performances crude, though serviceable, and that a gradual refinement comes from experience. Chicks, for example, improve the quality of their pecking by practice, but their first pecks and their first steps are good enough to keep them alive, and their skill improves no faster in the society of their fellows than in solitude from birth. On the other hand, as is to be expected, experiments reveal many decisive social influences. Orioles and some other birds, if reared in isolation, develop songs different from those usual to their species.[2]

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[1] J. B. Watson's Behavior, already cited, summarizes in Ch. IV a number of experimental studies of instinct, and gives references to these valuable monographs. The Journal of Animal Behavior, founded in 1911, contains a number of the studies: see especially articles by Wallace Craig, and Breed and Shepard on instincts of chicks and doves in Vols. II and III; by Yerkes on rats, Vol. III; by Herrick on nest-building in birds. G. W. and Elizabeth Peckham's Wasps, Social and Solitary and Carveth Read's "Instinct, Especially in Solitary Wasps," British Jour. of Psy., Vol. IV (1911) are excellent studies, more scientific, we suppose, than those of Henri Fabre. Jaques Loeb, in Comparative Physiology of the Brain and Comparative Psychology (1900) gives corroborative observations of his own on wasps, and numerous other personal studies of instincts. C. Lloyd Morgan's works Habit and Instinct (1898?) and Instinct and Experience (1912), and Hobhouse's Mind in Evolution (1st edition, 1901), contain valuable and interesting evidence and theory, but the technique does not guard against misinterpretations as does that of the students first-mentioned.

[2] As to the chicks, see Breed and Shepard, *op. cit.* Experiments by Scott and Conradi on songs of birds are summarized by Watson, *op. cit.*

The [illegible] objections to any instinct-theory, mentioned above, [illegible] and it is [illegible] other reasons that we [illegible]. It would be [illegible] the instinctive and other elements [illegible] the gross behavior [illegible] and all the "emotional consciousness" [illegible]. That has been the usual [illegible]. But [illegible] propose to neglect [illegible] problem is to [illegible] "instincts," "appetites," "habits," "pleasure and pain" [illegible] it is necessary to get these elements under a common [illegible] by a common denominator. That common denominator, according to [illegible] psychology, is the [illegible].

The [illegible] of the infant, [illegible] with the [illegible] ones of [illegible], but as [illegible] pointed out long ago, [illegible] a multitude of [illegible] reflex [illegible], coordinating the [illegible] movements with numerous [illegible].

[illegible] "compound reflex action," [illegible] of [illegible] neural mechanisms. By [illegible] evidence make this view [illegible] it in his [illegible], that the cat, in

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[illegible] has suggested this recently [illegible]. He argues that, since [illegible], it is fair to [illegible] the physiological [illegible] completely [illegible].

[illegible] should always carry on his [illegible], any more [illegible]. But still theories of [illegible] some comprehension of the [illegible] of behavior can be [illegible] they are composed of re-

[illegible] Psychology, [illegible]

pursuing the mouse or running from the dog, has any notion of life, or death, or of self and preservation. He is just born with a nervous system so constructed that when the moving object we call a mouse appears in his field of vision, he *must* pursue it, and when the object giving a different pattern of stimuli, which we call a dog, appears, he must run away if there is enough space. The acts are as fatal as sneezing, or the knee-jerk, and are correlated as exactly with their special excitants.

This view, he goes on, implies a vast number of preformed locks, so to speak, to which the outer stimuli are keys, but so also "each nook and cranny of creation, down to our very skin and entrails, has its living inhabitants, with organs suited to the place, to devour and digest the food it harbors and to meet the dangers it conceals." The instincts are simply one case of the adaptiveness of structure to environment which is shown throughout the animal creation. The older writings, with their pervading vague wonder at the clairvoyant and prophetic power of instinct and at the beneficence of God in providing it, says James, are a waste of words. "God's beneficence endows them, first of all, with a nervous system: and turning our attention to this makes instinct immediately appear neither more nor less wonderful than all the other facts of life." [1]

The above broad outlines of the physiology of instinct are still generally accepted. It should be remarked that the number of such organized reflexes has no relation to the total number of neurons in the body, as one element may be used in several different response-patterns. The central connections are so arranged, however, that certain combinations of stimuli will give rise to definite response.

Discussion of the metaphysical or religious implications of instinct and reason is not yet past, as is evidenced by the works of H. R. Marshall,[2] Hocking and others; but the origin of the instincts we all now refer to natural selection, in accordance with the general theory of biological evolution. Viewed in this light, the relatively great utility of the instincts in preserving the lives of their possessors does not have quite the fascination it had for our fathers, because we know that this adaptiveness has behind it a red trail of extinguished lives, whose behavior variations proved non-adaptive. Only those creatures whose variations were useful became the founders of species, and probably every species has always possessed some instincts which were maladaptive.

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[1] Briefer Course, pp. 391 ff. Principles of Psychology, Vol. II, ch. xxiv.

[2] Instinct and Reason, New York, 1898.

Some sceptics regarding instincts, as we have said, consider inheritance of a peculiar kind of *behavior* unplausible. "How can *fear* hatch out of an egg?"[1] But to most students of the subject there is nothing more mysterious about hereditary determination of some central nerve connections, than about hereditary determination of the joints of the spine or hand. The exact mechanisms of both processes are about equally obscure, and so, although the neurons in their earlier stages *appear* to grow in no more definite directions than the roots of a tree, we must infer from the similarities of behavior in successive generations, when the factors of imitation and determination by physical structure have been allowed for, that their course must be predetermined sufficiently to provide mechanisms for instincts.[2]

The remaining objection, that instincts are learned through prenatal ' experience ' — the process at this stage is really of the same fundamental nature as that of habit-formation or learning — may be relevant for some of the simpler reflexes connected with grasping by the fingers and flexing the limbs, but there remain a host of responses like sucking, swallowing, crying, not to mention the more complex ones, which overtax the nurture explanation.

For most sociological purposes, to be sure (not for biological or physiological), such experience as a child receives in the gestation period is so far beyond human control that it may be considered a matter of heredity.[1] The same may be said of those pseudo-instincts which are simply the necessary results of a particular gross bodily structure. So far as we are usually concerned, the important thing about an instinct, as about any natural bodily character, is that it will inevitably reappear generation after generation, regardless of acquired modifications in particular parents; and usually also, there are some limits within which it can be altered in one generation by training. The difference between what is inherited (including the prenatal experiences) and what is acquired, has the same general kind of importance, whether it concerns the selfishness of a man or the speed of a race horse. The instinctive and other physiological endowments of any species, including man, will, on biological principles, remain constant through many generations, although ' mutations ' do occur somehow which lead to evolution. The similar external nurtural influences, as climate, flora and fauna, and customs, which may give rise, generation after generation, to similar behavior, are, however, modifiable in a different manner, and so such pseudo-instincts should be distinguished as sharply as possible from biological instincts.

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[1] E. g., H. E. Walter, Genetics.

[2] Watson, *op. cit.*, Ch. V, discusses the problem of hereditary apparatus, and cites some experimental work on the embryos of lower animals which tends to show that the neural connections constituting the reflex circuits of instincts are regular hereditary characters. There are some slight references to the question in the standard works on heredity by Castle, Davenport, and T. H. Morgan, which indicate that they consider instincts hereditary according to the same principles as govern the other tissues. Davenport is rather extreme in the large scope he allows to hereditary mental peculiarities.

The foregoing discussion leads us to consider here a peculiar kind of native or inheritable behavior-equipment, which we may call *aptitudes*, or, with Woodworth, ' native capacities.' We refer, of course, to any bent or adaptability for training, or ' interest,' in a certain line of activity. Some dogs can more easily be taught to stand on their hind legs than others; we speak of ' mechanically-minded,' or ' musically-gifted ' people. We shall develop this matter further in the following chapter, but let us now point out the relation of this concept to that of instinct. An instinct, according to the best scientific usage today, is a specific response, or combination of reflexes. An aptitude, on the other hand, is much more general; it merely refers to some limitation in the range of learning, some direction in adaptability.

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[1] In some experiments described in "On egg-structure and the heredity of instincts," Monist, Vol. VIII (1897), Loeb showed that some instincts of protozoans are much distorted if the eggs are not left to develop in their native sea water, as the physico-chemical peculiarities of the latter help to determine the structure of the mature organism.

Physiologically it may be conceived in two ways, which are probably supplementary. The person gifted in any given line probably has effector-organs — ear, eye, throat, hands, etc. — specially well suited for this particular behavior, as a race horse must have strength and wind. But aptitude seems also to imply especially favorable neural dispositions which make learning easy and attractive in a particular field. There may even be a true instinctive nucleus, i. e., an innate system of reflexes, which are 'incomplete' from the point of view of a first practical performance, but which are easily completed by habits. It must be remembered that all instincts are soon supplemented and overlaid by habit-mechanisms (that is, other reflexes become connected with them); and it seems that the instincts do predetermine the range of learning in certain directions, for example, as to eating, mating, etc., even though there are many options left to individual experience.

Evolutionary Scale of Innate Responses

It is also useful in the study of motives to have a view of the ascending scale of innate responses; to look at the matter genetically.

The simplest organisms, plant and animal, have these hereditary forms of response to various features of the environment which enable them to get food and other necessities.[1] In animals, locomotion toward food and away from harm are among the most important reactions. In the lowest creatures, many of them being single-celled, these stereotyped responses are called *tropisms*, from the Greek word meaning to turn. Tropisms are classified according to the stimulus which excites them to action, — light (helio- or phototropism), heat, gravity, chemical action, touch and others. They are identical in principle with the reflex circuit, except that there are no separate nerve-cells involved, but only partially specialized tracts within the organism's one cell.[2]

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[1] Charles Darwin did some pioneer work on the apparatus for guiding roots and stems, which is given in his book The Power of Movement in Plants.

[2] It seems to us confusing to apply the term tropism to responses of the higher animals, as reflex and instinct will answer the purpose there. Loeb, however, uses it

Now the lowest organisms known have tropisms adjusted to more than one stimulus, so that the behavior of any living creature is determined by several 'motives,' acting now in one direction, now in another, and frequently simultaneously to produce a resultant course. Ordinarily it moves directly toward the source of one of the above-mentioned stimuli, if the stimulation is not too strong, by means of the simultaneous operation of two locomotor circuits,— one for each side. So long as only one of the sense-organs is stimulated, say by light, only the locomotor organ on the opposite side will move, and the body is slewed around to 'face' the light. Then presently both sense-organs are simultaneously stimulated, both locomotor organs respond, and the organism moves in a straight line toward the source of light. This *bilateral symmetry*, characteristic of the lowest orders of response apparatus, and directing the response *toward* an object, has left its impress on almost the whole animal kingdom. Nearly all animals have double sets of effectors, on right and left sides. But the creature has also other tropisms, say one which makes it avoid too strong a light or a few of its other dangers and obstructions, and another for enveloping the food when it is reached, etc. The reactions of the protozoa are so limited in number that an investigator who studies the behavior of one species can finally predict fairly well what its response will be to a certain set of stimuli. He cannot tell perfectly, however, for the response in all animals varies from time to time according to inner physiological conditions which cannot be directly observed.

As we go 'up' the evolutionary scale, we find a larger and larger equipment of reactions to more and more features of the environment, made possible by the acquisition of a bundle of specialized nerve-fibers which have numerous interconnections.

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in the more general sense. Some standard works on the evolutionary series of tropisms and instincts are H. S. Jennings, Behavior of the Lower Organisms (1906); J. Loeb, Comparative Physiology of the Brain and Comparative Psychology (1900), — this is partly superseded by his later works, The Organism as a Whole (1916) and Forced Movements, Tropisms and Animal Conduct (1918); S. J. Holmes, Evolution of Animal Intelligence (1911), Studies in Animal Behavior (1916). The excellent philosophical work of L. T. Hobhouse, Mind in Evolution (1901, 1915) is well known. A useful summary is in M. Parmelee, The Science of Human Behavior (1913).

With the development of a nervous system, that is to say, the simple reflexes can be combined and recombined into units of higher and higher orders. The nervous system has an *integrative* function, it enables a limited number of elementary reactions to be used for a larger number of purposes, just as the grasping of our hand — simple in itself — enters into so many different kinds of acts. The combinations of reflexes which are inheritable are the instincts. Those which are acquired from individual experience are habits; the acquisition of habits, as we shall see in the next chapter, is learning.

We may notice here, though we shall return to it, the point so admirably developed by Professor Holt, namely, the recession of the immediate stimulus as the key to the organism's behavior.[1] If the animal has only two locomotive circuits, set to be activated by light, his behavior is wholly a function of the source of light. What he is doing is moving toward the light. But if he has another tropism which makes him avoid heat, then when he approaches the source of light his behavior will be a function neither of the position of that source, nor of its heat, taken singly, but of the total situation. The key to his behavior is in the unreal or ideal object upon which his separate responses converge, — the point in his path toward the light where his heat-avoiding reaction will become stimulated. And that is the case in all complex conduct. It is, presumably, ultimately reducible to reflexes; but their involved interplay disguises them to common-sense observation, and the one object of which the behavior as a whole is a function becomes an ideal and perhaps non-existent focal point, — for instance, the gold which it is *hoped* may be in the unworked mine, or the love of God which one hopes to merit.

MECHANISMS OF APPETITES — 'PERSISTENCE'

If we examine the phenomena of instinct at further length, we shall find certain complications which seem to upset the above simple theory. We find, for instance, that some instincts become operative only some months or years after the animal's birth, while others regularly disappear after a period of activity; and further that all instincts are somewhat variable in action. A given stimulus does not always produce identical responses in the same animal. Sometimes a dog, for reasons of his own, will refuse to stir after a rabbit or a fleeing cat. But the worst obstacle of all to the reflex-theory is the indefinite but persistent *striving* which instincts so frequently manifest, the refusal of the animal to quit until a number of expedients have been tried or the ' natural ' end achieved. A dog hunting a lost trail, a mouse escaping from a cat, a cat trying to open a puzzle-box to secure food, all exemplify this *resourcefulness* which, according to some psychologists, characterizes all instincts. McDougall, for example, refuses to be content with the merely mechanical reflex formula, for, he says,

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[1] The Freudian Wish, especially Ch. II.

> All instinctive behavior exhibits that unique mark of mental process, a persistent striving towards the natural end of the process. That is to say, the process, unlike any merely mechanical process, is not to be arrested by any sufficient mechanical obstacle, but is rather intensified by any such obstacle and only comes to an end either when its appropriate goal is achieved, or when some stronger incompatible tendency is excited, or when the creature is exhausted by its persistent efforts.[1]

Yet if we can get a more definite idea of how the simple, fatal reactions or chains of reflexes become integrated so as to provide for flexibility and adaptability of behavior, we shall have a more comprehensive and more practically useful understanding of instinct than if we content ourselves with invoking a magic ' conative striving,' which is supposed to be essential to *any* simple instinct, and by pointing to our own consciousness in *apparently* similar situations. These generalities attribute a pseudo-simplicity to the instincts, and they oversimplify the larger human endeavors still more.

The complications mentioned are less formidable to our theory when we consider (besides the variability in behavior which is to be expected when opposing instincts are excited by their appropriate stimuli nearly at the same time) the variations in stores of energy in the cell-tracts at different times, as well as other differences in the inner physiological state. The hungry dog's total stimulation in the presence of a rabbit is very different from that of a replete dog, and so on. There is no question that various substances and secretions within the body are continually stimulating inner sensory nerves, thereby contributing to the organism's total behavior. Breathing, for instance, varies with the composition of the blood as regards oxygen and carbon; and clearly the sexual secretions have a decided influence on the general activity, so that an identical external stimulus will at one time be effective and at another, not. Hunger and thirst are inner conditions which involve chemical and mechanical stimuli, and it is probable that excess or deficiency of muscular cell nourishment gives chemical stimuli toward bodily activity (exercise) or toward repose.

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[1] Social Psychology (1909), p. 27, Ch. I.

The changes in nervous structure which underlie the growth and subsidence of instincts are evidently to be accounted for along the same lines as similar phenomena in the grosser bodily structures, such as the beard and two sets of teeth, and it is believed by physiologists that chemical secretions poured by certain glands into the blood have a large share in these regulations of bodily growth.[1]

On the other hand, the ' physiological state ' which contributes to behavior may not be a matter of inner stimuli; it may be nothing more than temporary insolvency of certain neurons or muscles, so that a reaction for which the connections had been best established is temporarily ' out of order.'

This line of explanation of the *appetites* of hunger, thirst, oxygen, sex, exercise and repose, and the fact of differing states of efficiency among various reactions at one time, supplement the compound reflex theory of instinct so that the whole becomes reasonably adequate for the facts.[2] An appetite, as of hunger, arises and persists through the continued inner stimulations; there are also instinctive responses connected with these promptings and with stimuli from the outer situation which lead to peculiar ways of satisfying the appetite, i. e., the food-getting, sexual instincts, and so on. The periodicity of these appetites is explained by the functional round of nutrition and expenditure of energy by the body, and is connected also with the natural cycles of day and night, summer and winter. The continued ' striving ' of an instinctive process is then to be attributed to the continuance of stimulations, which keep inciting the creature to activity until the stimulus is removed, — by ingestion of food or otherwise. The stimulations of fear naturally continue so long as there are any indications of the feared object, and the pangs of hunger persist until the stomach is filled. The response first tried is the ordinary instinctive one, that is, the one for which the hereditary neural connections are most favorable. But when this response fails to stop the current of stimuli, the depletion of energy through this particular chain of reflexes will cause the incoming neural currents (which may now be through different sense-organs, from other aspects of the external situation) to be diverted to other instinctive or habitual responses, or they may break through wholly new connections and thus cause a ' random ' movement. Thus we can account for the variability of instinctive action wholly on mechanistic principles, and at the same time, as will appear in the next chapter, have made a long start on the explanation of learning and intelligent action.[1]

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[1] Loeb, *op. cit.*; Herrick, *op. cit.*, pp. iii, 249.

[2] The above account of the appetites was derived chiefly from lectures by Professor E. B. Holt. Watson's discussion of the organic sense (Psychol. pp. 64–66, is to the same effect. Cf. Woodworth, *op. cit.*, Ch. V, and Herrick, Introduction to Neurology (1915), Ch. XVII.

The moral for social scientists of all this physiologizing, is that the instincts are not, as McDougall and many others would lead us to believe, all homogeneous lumps, differing from each other only in their emotions and gross bodily expressions, but are varying blends of numerous mechanisms. The ' striving ' of each one, therefore, is due to a mechanism in some degree peculiar to itself, and only by knowing something of this individual mechanism can we consider intelligently such problems as the ' balking ' of the ' instinct of workmanship,' the ' repression ' of the ' sexual instinct,' or the possible ' sublimation ' of the ' instinct of pugnacity.' Physiological analysis, we believe, is the only way to squeeze the magic out of the concept of instinct.

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[1] See Woodworth, *op. cit.*, Ch. V, especially sections on "multiple possibilities of reaction," and "advantage possessed by one alternative reaction over the others." His account is similar to ours but is vague in many places because he uses so much introspective data. He assumes, for instance, that when a reaction results in "pain," there is no need of accounting further for the shift to another response.

Let us keep in mind, then, these important classes of behavior-mechanisms, all of which are relatively stable through generations of any race, and all of which have been confused with ' instinct ' in the social sciences. An *instinct* is a specific response provided by a complete, hereditary system of reflexes, which core, soon after birth, begins to acquire supplementary reflexes based on the individual environment. In addition to such hereditary neural connections, much similarity and also much variability of behavior is provided by *other hereditary bodily characters*, such as the thumb, or the glands, etc., which furnish the stimulations of appetite. Then there is the *general aptitude*, which apparently is given direction by both instinctive and other organic bases, but which as a whole always includes some learned, or acquired, and therefore variable, reflexes. All the foregoing are predominantly hereditary characters, and all are to be sharply distinguished from that stable mode of behavior which is the result of uniform external conditions in which learning takes place, such as landscape, companions, social customs and culture. These conditions are usually more amenable to deliberate social control than are the hereditary characters. Generalizations may be made about each of these stable modes, and useful ones, but we must beware of predicating of all what is true of only some.

CHAPTER IX

THE HUMAN INSTINCTS AND APTITUDES

Inventory of Human Instincts

We may now proceed with the topic which would have seemed to be the only one connected with instincts that could be important to us, — namely, the inventory of human instincts. McDougall's list (1908) must be noticed, as it has been the most influential of recent years. It is based considerably on the older lists of Preyer, Schneider, James, Sutherland, Baldwin and others. McDougall believes there are seven human instincts of fundamental importance in social life, and that the activity of each is attended by a peculiar primary *emotion*, as follows:

Instinct	corresponding emotion
Flight	Fear
Repulsion	Disgust
Curiosity	Wonder
Pugnacity	Anger
Self-abasement (subjection)	Subjection, negative self-feeling
Self-assertion (display)	Elation, positive self-feeling
Parental	Tender emotion

Other true instincts, according to him, which are less important for society, are sex or reproduction, gregariousness, acquisition or ownership, constructiveness or contrivance, hunger, and "a number of minor instincts, such as those that prompt to crawling and walking." [1] The tendency to habit-formation and a consequent preference of the familiar to the unfamiliar thing, and the prolonging effect of pleasure on action and the inhibiting effect of pain, are also considered primary and ultimate psychological facts, and therefore somewhat of the nature of instincts.

He holds that pleasure-pain theories of action are shallow and libelous to human nature; that the instincts are the prime movers in all action, frequently over-riding pleasure and pain. But pleasure and pain, it is hinted, are of great efficacy in learning, in grafting habits onto the instincts so that the latter may function efficiently in the subject's peculiar environment.[1]

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[1] *Op. cit.*, Ch. III.

This list has much in common with that which we shall presently sponsor, but McDougall's concept of an instinct — say that of ' flight ' — as a lump, exercising quasi-intelligence in dealing with the situation before it, is considered a misleading oversimplification, as we have shown. We therefore follow the practice of Thorndike, Woodworth and Watson in speaking rather of *groups* of human instincts. The specific responses to definite stimuli (internal or external), are necessarily very numerous, for learned responses are supposed to be only new combinations of preëxisting reflex elements; consequently for convenience of treatment it is necessary to group the instincts, so far as they can be recognized, into classes having similar stimuli, or having responses giving the same general effect.

Present-day experimental psychologists are loath to generalize about such a gross entity as ' *the* instinct ' of ' curiosity,' etc., until they learn more exactly what are the stimuli and responses which are to be headed instinctive curiosity. They speak, therefore, of the groups of responses which may be called instinctive curiosity, or which result in food-getting, defense, and so on.[2] Then the inclusion of any given activity in the major groups de-

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[1] *Op. cit.*, Ch. I, p. 43; Ch. II; Ch. VII.

[2] "Those who, like McDougall, attempt to trace all motive force to the instincts, would regard such acts as driven by the native impulses of curiosity and manipulation; but in so doing they miss the point. There is not an undifferentiated reservoir of motive force, to be called curiosity, that can be led off into one or another act of perception; but curiosity is simply a collective name for an indefinite number of impulses, each of which is dependent on the existence of some degree of ability to perceive and understand a certain object. The child shows curiosity first with regard to bright lights and sharp contrasts, which are the natural stimuli for his eye movements; later, after he has learned to some extent to know persons and things, his curiosity is directed towards them; and when he has begun to perceive the relations of things, he shows curiosity regarding these relations." — Woodworth, *op. cit.*, p. 103.

The same objection applies in greater degree to most members of the Freudian school, as their instincts are "undifferentiated reservoirs of motive force" *par excellence.*

The criticism, it is true, is from the point of view that the physico-chemical series in the body is not interrupted by ' the mind,' and that physiological explanapends on the accuracy of observations which have been made in respect to it, rather than on the general question whether there is an instinct of such and such.

The criteria by which true instincts are to be recognized have been indicated. Proved first performances by numerous members of a species (at birth or with the possibility of learning otherwise precluded), of a similar response to similar situations, the response being skillful and adaptive enough on the first occasion so that it cannot be considered a random effort, — these specifications are necessary to the most satisfactory test. The first performance may be possible only some months or years after birth, because instincts mature in that manner, as do teeth, hair, etc.

By tests of this nature students of animal behavior have given us our most reliable knowledge of what animal instincts actually do exist, but of course they can be only crudely applied to human beings. Watson has recently directed experiments with a number of infants in a maternity ward, which give pretty satisfactory evidence of the instincts then mature,[1] but which (naturally) shed no light on instincts which may mature at later periods. Continued observations of a few growing children have been recorded and are used by Thorndike in The Original Nature of Man (1913). Such evidence is likely, however, to be vitiated by prepossession in the observer; which leads to his overlooking important possibilities of learning.

We must have some recourse, then, to uncertain and inconclusive criteria. Woodworth, a critic of the first order, says:

> Where the members of a species or other natural group are either more alike or more different in any respect than can be accounted for by their individual experience, we have reason to believe that the likeness or difference in their traits is due to the native factor.[2]

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tions are the most fundamental. It is open to anyone to take the view of interactionism, in which case he may as well give his psychic powers plenty to do and so lighten his labors in physiology.

[1] Resumed in his Psychology from the Standpoint of a Behaviorist (1919). Two of the studies are reported by Watson and Morgan, "Emotional Reactions and Psychological Experimentation," Am. Jour. Psy., 28: 163–174 (1917); and M. B. Blanton, "The Behavior of the Human Infant during the First Thirty Days of Life," Psy. Rev., 24: 456–483 (1917).

[2] *Op. cit.*, p. 45.

The crucial thing is to judge whether experience can account for such similarity or difference. If we find a way of acting, say as to providing habitations, common to all known races of men, we are still not justified in calling it instinctive unless we can rule out (1) Similar environmental and structural influences, and (2) Possibility of intercourse between societies, and thus the influence of imitation, or culture.

Similarly, McDougall's tests, the existence of analogous tendencies in other higher animals, and exaggerated or abnormal instances among men,[1] must be used, but with great caution. William James assumed that man has inherited most of the prehuman instincts, but Watson properly replies that animals which have the most complete instinctive equipment, for example, the insects, have the least capacity for learning; and those with largest learning capacity seem to have fewest instincts. Instinct and learning power, he says, are present in any animal in inverse ratio.[2] The instincts of lower animals, many of which are abundantly attested,[3] may suggest hypothetical human instincts, but more evidence must be looked for.

Beginning with instincts proper (specific responses), the best authenticated major groups in men, arranged roughly in simple-to-complex order, are as follows (the list is almost the same as Woodworth's, Ch. III):

1. Inner reflexes
2. Muscular coördinations or bodily control
3. Locomotion
4. Vocalization — language
5. Food-getting
6. Defense — fear
7. Offence — pugnacity or rage
8. Exploration with eyes and manipulation — 'curiosity,' 'contrivance,' 'novelty'
9. Sexual
10. Parental
11. Gregarious
12. Responses to social approval and disapproval
13. Other emotional reactions
14. Other positive and negative responses

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[1] *Op. cit.*, p. 49 (Ch. II).

[2] Psychology, p. 254.

[3] An extended list, critically assembled, is in Watson's Behavior (1914), Ch. IV.

The distinctions are rather arbitrary and illogical; several groups might be condensed, as defense and offence, gregariousness and responses to social approval and disapproval. Some, moreover, as the parental, gregarious and social, are still doubtful, and much further evidence is required before we can unhesitatingly assert that there are such instincts. Finally, some classes are involved in others; "emotional reactions" are partly included in inner reflexes, "muscular coördinations" are used in all the subsequent groups;[1] and nearly all responses might be classed as positive or negative. But on the whole, such a list appears to be the most convenient.

To explain and defend it in greater detail:

The *inner reflexes* are those of the heart, lungs, stomach, other parts of the circulatory and alimentary systems, glandular reactions, and doubtless still others,—unquestionably a very great number in all. The *appetites* of oxygen, exercise and repose are provided for by some of these innate mechanisms. Appetite, as we use the term, refers to a reaction involving inner stimuli which recur regularly because of physiological cycles. These stimuli set the corresponding *instincts* in motion.

By muscular coördinations or bodily control is meant those mechanisms providing for flexing and extending the limbs, lips, tongue, moving the head, moving and focusing the eyes, the grasping reflex of the hands, upon which much experimental work has been done, the patellar reflex, the Babinski reflex, and so on. All authorities are agreed that these reactions are due to innate neural adjustments, though objection might fairly be made to classing them with the instincts, — instincts being considered complex combinations of reflexes. We list them so that they will not be lost sight of, and also because many if not all of them *are* complexes of simple reflexes. As has been mentioned, the simple reflex is supposed to be an abstraction, not existing in isolation from larger responses.[1]

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[1] On this foundation Hocking (Human Nature and Its Remaking) erects a considerable metaphysical superstructure, — a hierarchy of human instincts, culminating in "the will to power." The situation is paralleled, however, by many mechanical contrivances which use the same minor apparatuses in different operations, like an adding machine. Its explanation does not necessarily require a ghostly guiding hand.

Instinctive *locomotion* apparatus is complex and well-developed in the lower animals, and by analogy James and his followers have believed that the human infant crawls, walks, climbs, more by instinct than by learning. It is doubtful. Probably we have here an aptitude for acquiring locomotion habits. Watson records experiments with several infants to determine if crawling is instinctive, and says the results are inconclusive (Psychology, p. 248).

Vocalization instincts are unmistakable; and these illustrate the successive appearance or 'ripening' of the native responses. After several months in which crying is the only vocal response, the infant begins to coo; presently it is saying "Ah-goo," or "Ah-boo"; "Mam-mam," "Ba-ba," "Da-da." These are the beginnings toward the vastly complex *language habits* which are a distinguishing mark of the human species.

The *food-getting* responses include moving the head to catch the nipple, sucking, swallowing, chewing, spitting out bitter substances, crying when stimulated by the appetites of hunger and thirst. Movements of the arms and hands to put things into the mouth should doubtless be included; and possibly there is a slight instinctive bent at later ages toward hunting wild game, or toward other fairly definite food-seeking behavior.[2]

The *defense* responses are various. Coughing, sneezing, blinking, crying, resistance to falling, are of this type, as well as jerking away from painful stimuli such as pinches, pricks, or burns. The native fear-reactions, recently studied discriminatingly by Watson and Morgan, may be put into this class broadly speaking. The stimuli to original fear, as distinguished from pain-reactions, appear to be only loud noises or the subject's falling for lack of support; the responses are "a sudden catching of the breath, clutching randomly with the hands (the grasping reflex invariably appearing when the child is dropped), sudden closing of the eyelids, puckering of the lips, then crying; in older children possibly flight and hiding (not yet observed by us as 'original' reactions)."[1] It is worthy of remark that contact with a variety of lower animals, or bright flashes of light, brought no signs of fear.

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[1] Woodworth (*op. cit.*, p. 47) adds that native equipment includes the use of the sense-organs, in seeing, seeing red, etc. This category appears to us redundant, since every sensation is presumably correlated with some reflex. (See above, Ch. VII.)

[2] See Watson, Psychology, pp. 238 ff., for recent experimental work, including that of Mrs. Blanton, which is also described in Psy. Rev., 24: 456–483. Watson doubts the hunting instinct (p. 254), which James and Thorndike had endorsed (Thorndike, *op. cit.*, pp. 50–56).

Watson suggests that in fear or in any other strong emotion, the final stage of behavior when stimulation becomes sufficiently strong, is paralysis, or what we call in animals the 'death feint.' One recalls James' anecdote of his instinctive fainting at the sight of blood. These and the reactions of aversion which McDougall ascribes to an instinct of disgust or repulsion will fall sufficiently well into the large class of innate defense mechanisms. We *learn* very early indeed to fear and avoid objects which were not originally feared, but that is another story. For example, a baby has no instinctive fear of the *danger* of falling, and will blithely launch himself off any elevated support; whereas the sight of a yawning chasm before the experienced adult is a frightful object.

There are also numerous internal reactions connected with fear, to which we shall recur in our discussion of the emotions.

The instinctive responses characteristic of rage, anger, pugnacity are arbitrarily classed as *offensive*, although the general effect of them, too, is to ward off interference with the subject's own activities. The experiments described by Watson indicate that the only definite stimulus to such reactions, in the first few months of human life, is any hampering of the infant's movements. If the face or head is held, crying results, quickly followed by screaming. The body stiffens and fairly well-coördinated slashing or striking movements of the hands and arms result; the feet and legs are drawn up and down; the breath is held until the child's face is flushed. In older children the slashing movements of the arms and legs are better coördinated, and appear as kicking, slapping, pushing, etc. These reactions continue until the irritating situation is relieved, and sometimes do not cease then.[1] Holding the arms tightly to the sides has the same result. The stimulus should probably be broadened to include lack of satisfaction of an appetite. The writer has observed that whenever a certain baby of three or four months awakened hungry, its first responses were subdued crying and waving of the arms, which were soon followed by vigorous kicks of the legs and 'angrier' cries.

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[1] Watson, Psychology, p. 200. Taken from Watson and Morgan's report. See *Ibid.*, p. 242, on defense movements.

There are here also important internal reactions, which will be treated under emotions. Biting is very likely instinctive in such situations, at later ages. Throughout life a substantial core of rage-responses are aroused by any thwarting of the agent's activities, although, like all other behavior-series, they are continually regrouped by learning. The attitude of 'picking a fight,' common among boys, is probably sophisticated, being based on experience of the thrills of successful combats which were undertaken first at the stimulus of outside interference. The 'offensive' behavior manifested in the lower animals toward their natural prey, must, of course, be distinguished from rage or anger. It is simply part of their food-getting instincts.

Visual exploration and manipulation appear to be the instinctive kernels to 'curiosity,' 'contrivance' or 'workmanship,' and 'desire for novelty.' The new-born baby is able to move both eyes coördinately to fixate on a light,[2] and in a few months is actively turning its head as well, in the direction from which sounds come. At six months or so it begins to reach for any object of suitable size, to grasp it, to pass it from hand to hand, probably putting the object in its mouth. When the child can crawl its journeys are toward objects which have been sighted and which are manipulated with the hands when approached.[3] It is to be noticed that none of these objects is long dwelt on at a time; something new is continually sought. Such search is perhaps explicable in terms of fatiguing of the first response, giving the advantage to another response toward a different object. At any rate, the desire for novelty is an outstanding trait throughout life, causing much of the irksomeness of labor and of the pleasure in travel and ' recreation ' in general.

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[1] Watson, Psychology, p. 200.

[2] Watson, *op. cit.*, pp. 243–245. See also his discussion of "positive and negative reaction tendencies," pp. 248–250.

[3] Cf. Thorndike, *op. cit.*, Ch. X, Woodworth, *op. cit.*, pp. 49, 50.

The *parental* instincts of the human race are, of course, very obscure. We have no way of observing their manifestation uncomplicated by training. Thorndike follows McDougall and many others in supposing that men, as well as women, have the parental bent; [1] and numerous moralists, as is well known, have traced the altruistic human motives to this supposed instinct. There are well-developed parental instincts in many of the lower animals, as we sometimes have good reason to know when we trespass on their offspring; while the appeal of children to nearly all human beings seems greater than can be accounted for on other grounds. But these evidences are inconclusive. The question calls for further investigation.

The human *sexual* instincts are undoubtedly far less elaborate and specific than is the case in the lower animals, and much more is left to the chances of learning. The *appetitive* mechanisms have already been referred to; the instincts paralleling them are responses that are released by the inner stimulations of the appetite. The sexual appetite in man is fairly well understood as a physiological matter, but what kind of instinctive behavior would result from it apart from experience can only be surmised.

Watson believes that the infantile responses of smiling, gurgling, cessation of crying in response to pressures on the erogenous zones, "including the stomach," are in this category of instincts, and that the love emotions thus defined are the source, by association, of many if not all, of our pleasant experiences.[2] This is essentially the Freudian doctrine, though it is also held by other psychologists of pleasure-pain. As we shall see, the most tenable theory of pleasure-pain appears to be on lines of a complex of inner reactions,[3] and it is not unlikely that at least part of these are common to sexual excitement and other pleasant responses. But the position that sex motives are at the bottom of all or nearly all others, is an extreme one.

[1] *Op. cit.*, Ch. VIII.

[2] *Op. cit.*, pp. 201 ff.

[3] Below, Ch. X.

The *gregarious* instincts and *responses to social approval* and *disapproval* must be considered together, for they, like the hypothetical parental responses, are quite ill-defined, perhaps are not specific instincts at all.[1] It is the impression of all students, so far as we are aware, that man is naturally gregarious, and tends to keep himself in the vicinity of some of his fellow-creatures. The analogues among the lower animals, such as bison, sheep, geese, are here, apparently, not misleading. The growth of cities and their commercial amusements appears to depend partly on such instincts.

Man seems naturally to want, however, not merely the society of members of his kind, but also their notice of him; and not only their notice but their *favorable* regard. Their scorn is always unwelcome; the dread of it we know as shyness or embarrassment. Sometimes this imputed scorn is unbearable. Our misery in a ' social blunder ' is a case in point, and we recall James Mill's observation that when men suicide rather than face ' disgrace, they are certainly not moved merely by the sensuous consequences of social ostracism. That these full-fledged motives of conformity or emulation, as we know them, are very largely compounded of habitual elements (' associations of utility ') cannot be questioned; but the enormous rôle which custom, fashion, and aspirations for fame or leadership has played in all human societies strongly suggests that they are rooted in instinctive desire for praise.

Under various names such as emulation, pride, vanity, desire for social approval, this impulse has been remarked upon by philosophers of all ages as one of the master human passions, and most students have thought that the attempt to analyze it into associations of sensuous pleasures is a failure. We know that very young babies are quite sensitive to smiles and frowns, before any punishments could be associated with the latter; children in general ' love to be bragged about.' An old couplet has it that

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[1] W. Trotter's Instincts of the Herd in Peace and War is a recent elaboration of this assumed group. Thorndike follows James, McDougall and others in accepting the group as innate, though with some reservations. He gives some evidence other than that mentioned above (Ch. VIII).

Men the most infamous are fond of fame;
And those who fear not guilt yet start at shame.[1]

William James' remark that nine-tenths of the world's work is done by emulation is well known, also we have noticed the eloquent passages of Adam Smith attributing economic activity largely to it and saying further that the Creator, through this original desire of human approval, has made man His vice-regent to pass judgment on the conduct of other men.

As to the work of the world being done by emulation, we must remember that these philosophers had in mind especially Anglo-Saxons, whereas there are some races which have very little of the spirit of contest. McDougall illustrates the point by relating that he could not interest the native children of Borneo in games, because they cared nothing for competition.

Adam Smith's second observation hits the nail pretty well on the head, for that the binding effect of *mores* or customary morals the world over is chiefly due to fear of adverse public opinion can scarcely be doubted. *What sort* of conduct is approved or disapproved by the social group varies enormously from tribe to tribe, but the great force that holds the people to whatever conduct is thought good is always the same, — one's deference to the regard of his fellows. If it were not so, no society could maintain enough policemen to keep order, and few men would wear stiff collars.

McDougall's classes of gregariousness and "self-assertion" are therefore accepted, but his other group, "self-abasement," seems doubtful. Hero-worship is undoubtedly universal, but we should explain it as a case of associative transfer of our response, originally given to social approval of ourselves, to such approval of our heroes. Adam Smith's similar explanation of our fawning upon rich and successful people may be recalled. Envy and jealousy also may be interpreted as baffled desires for our own glorification. Delight in (positive response to, more accurately speaking) excellence for its own sake is probably but a form of hero-worship, — the thing is *admirable*, and admiration is instinctively sought for, i. e., considered good. James has made

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[1] Churchill — The Author.

some observations along this line, though not in connection with instincts.

Original tendencies relative to ' self ' must be viewed cautiously always. Either the self is merely the body of the subject, and hence the concern of all his responses, or else it is a concept implying considerable experience and reflection. We can say, if we like, that the baby not only wants food but wants it for *himself*, but we have not thereby made two instincts grow where but one grew before. The egoistic or altruistic reference of instincts is a matter of description by the observer of the whole situation. The only original impulses of distinctly altruistic effect are in the parental group, which we have seen is extremely ill-defined. Possibly these, or the gregarious group, may shade into instinctive sympathy and kindliness, but at any rate it is clear that if we instinctively seek the approval of other people, we shall soon find out that one of the surest means of getting it is to thwart our own interests somewhat for the satisfaction of some of theirs. It is also plain that the association process goes far toward accounting for sympathy with suffering which is close at hand. We react away from the child's ' sore finger ' which he is so proud to show, because it arouses images of our own past pains, just as we shrink from the sharp knife which cut us and hence is ' associated ' with pain. In the first case there are numerous other motives impelling us toward relieving the other's distress, but in part they are based (associatively) on our desire to wipe out the source of unpleasant stimulations and to share in the other person's pleasure of relief.

In emphasizing the ' irrational ' character of this desire for approval, however, in common with McDougall and most other social psychologists, let us not forget, as many of them do, the associationists' proposition that associative recall does not always reproduce *all* the original ideas. The links that bind reactions together often lose their conscious correlates, and so the association is inexplicable so far as introspection shows. This proposition, as we shall see, has been fully validated by modern experimental work, and so we must make large allowance for the many associations in everyone's life of forcible and disagreeable repression, or pleasant sensuous rewards, in connection with approval or disapproval of other people; and hence we must leave the task of delimiting the instinctive core of emulation, if there be any, for careful study in the future.

The *other emotional reactions* of our list includes internal changes to be described in the next chapter; also overt behavior such as laughing and weeping.

Other positive and negative reactions will be dealt with in our discussion of pleasure and pain. They include overt (outwardly-observable) seeking and avoiding responses, somewhat like reaching for an attractive object or jerking away from a pinch; and also, probably, numerous inner reactions of the glands, blood-vessels and other systems. Practically all original responses (instincts) could doubtless be classed as positive and negative, both from the external observer's point of view, and from the standpoint of the pleasant or unpleasant feeling of the subject. This division corresponds roughly with Thorndike's "satisfiers and annoyers."[1]

Other Alleged Instincts

We can scarcely avoid that task which confronts every enumerator of human instincts, namely, passing on the claims of several other candidates for the rôle. Imitation, suggestion, play, rhythm, construction (contrivance, workmanship, creative impulse), property, habitation, migration, greed, adornment, cleanliness, sympathy, moral, religious, are some of the names which have been used by writers on the subject to describe alleged instincts or groups of instincts. Wallas' "dispositions" of trial and error, pleasure-pain, habit and thought, which he regards as quasi-instincts, should also be considered. What shall we do with them?

These words all have pretty definite meanings, and hence refer to relatively stable, well-defined modes of behavior. These modes, however, all clearly contain numerous learned elements, which elements, in our opinion, greatly predominate over the instinctive responses. Some of the stability is also to be ascribed to the general bodily characters of the human race, and to stable features of the environment.

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[1] *Op. cit.*, Ch. IX.

Psychologists generally discredit imitation as an instinct, though Thorndike believes there are a few particular imitative responses, such as smiling when smiled at. Experimental work on lower animals seems to demonstrate that a new trick is not learned any more rapidly by one animal if another of his species who has learned it, demonstrates before him.[1] Most of the imitative responses of the child can be accounted for in terms of the conditioned reflex (learning), and imitating habits. Of course there is no question that imitative learning, whatever its relation to instinct, plays an enormously important rôle in all human affairs. We shall have occasion to notice this aspect in later chapters. Suggestion also is believed to be reducible to learning; it is, in general, one case of ' mistaken inference,' which, as we shall see, characterizes all learning to some degree.

Play, habitation and migration would be important for economics if they proved to have large instinctive elements not already accounted for. The play of the child seems to be the sum of all activities developing from his manipulative, vocal, visual, explorative, locomotive and other specific responses, regulated by his general appetites of exercise and fatigue. Imitation of his elders plainly has a great part in determining the particular forms. The ' play ' or amusement impulses of the adult, which are contrasted with work activities, contain manipulative and explorative (' curiosity ') interests, and also the important affective element of aversion to the compulsion which work involves.

Sympathy, devotion, the ' moral sense,' have already in effect been dealt with under the heads of parental behavior and positive responses to the approval of other people. Religious behavior contains the same elements, and in addition, by numerous associative transfers, fear-constituents. The adornment or esthetic impulses generally, as they appear in adults, clearly involve responses to social approval, positive differential responses to colors and forms (a baby will show preferences in this respect before associations seem to account for them), and the physiological cycles involved in rhythm.[1] We are certainly not prepared to deny that other clear instinctive elements may yet be demonstrated.

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[1] Watson, Behavior, Ch. VIII; cf. Thorndike, Ch. VIII, and McDougall, Ch. IV.

Property, acquisitiveness, greed, hoarding, collection are often asserted to be instinctive. If they are, in any useful sense, economists want to know it. Modern psychologists do not make much of this group. Thorndike thinks man has tendencies to hoard food, but that the innate kernel is so soon and so completely overlaid by associations of the utilities of property, that the enjoyment of the latter is almost wholly derived from such associations.[2]

There are three kinds of evidence for such an instinct: (1) the hoardings of some animals, such as squirrels and dogs; (2) the collecting craze which nearly everyone has at some period of life, with regard to stamps, coins, books, etc.; and (3) the infant's stout defense of his 'property' in playthings. The last-named is often a mere dog-in-the-manger attitude; he is busy with something else, but when another child attempts to use his toys, he comes promptly to repel the invader. In the child, it is a matter of original 'curiosity,' — looking at, reaching for, grasping any small object not feared; and instinctive rage responses if the object held is forcibly removed. Parents have frequent occasion to take objects away from children, and it is an easy transfer of the rage which such dispossession engenders to the stimulus of otherwise losing some object which the child is accustomed to manipulate. The other two lines of evidence are not valuable. Imitation and acquired interest make the collector; and but few animals, not including the apes, are known to hoard. Desire for ownership is rather a mode of behavior which works out from the interplay of plastic, teachable human nature with the stable condition of limited supplies of desired external objects.[3]

In workmanship, contrivance or construction, so far as mankind is concerned, the manipulative and visual-explorative responses are prominent. Watson says "This instinctive tendency (manipulation) is sometimes exalted by calling it constructiveness,"[1] and Thorndike's view is similar. We have noticed that there are original differential positive reactions, i. e., 'preferences' of the child among objects at hand; and these are probably extremely important in artistic creativeness. The purely instinctive kernel of manipulation may be described in Watson's words:

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[1] Such as heart beat, respiration, alimentary cycles, sleep, pendular actions of the limbs.

[2] Ch. VIII. He refers to C. F. Burk, "The Collecting Instinct," Ped. Sem., 7: 179–207 (1900).

[3] Cf. Watson, Psychology, pp. 254, 255.

> To reach out for objects, to scrape them along the floor, to pick them up, put them into the mouth, to throw them upon the floor, to move back and forth any parts which can be moved, is one of the best grounded and best observed of the instincts.

Before there is any real construction or creation in question, a vast amount of learning or consolidations among other instincts must be achieved. The desire for excellence or art for its own sake is probably moulded largely out of instinctive and associative desires for social approval, quite on associationist principles. (We consider the mechanics of associative learning below, Ch. XI.)

The supposed instinct of constructiveness or workmanship has been exploited most vigorously by Veblen, and it will be instructive to consider his statements as rather typical of a sociologist's handling of the instinct-concept.

He insists that criticisms of his concept from the physiological point of view are irrelevant, "instinct, being not a neurological or physiological concept." "It is enough to note," he says, "that in human behaviour this disposition is effective in such consistent, ubiquitous and resilient fashion that students of human culture will have to count with it as one of the integral hereditary traits of mankind."[2] Just how a behavior-trait can be hereditary without hereditary neurological mechanisms we are left to surmise, and the question remains open as to whether the workmanlike propensities are really biologically hereditary and unitary. It is true that the general facts of heredity were inferred from gross observations before much was known of the physiology involved; but the chance of misinterpretation is so great in this method that we can hardly afford to disregard the evidence of physiology. It was exactly by such methods as Veblen's that the religious, moral, self-preservation, and numerous other instincts were 'proved' to exist.

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[1] Watson, Psychology, p. 260.

[2] The Instinct of Workmanship (1913), p. 28. (Macmillan edition.)

Again, Veblen says that the position of the instinct of workmanship

> is somewhat peculiar, in that its functional content is serviceability for the ends of life, whatever these ends may be; whereas these ends to be subserved are, at least in the main, appointed and made worth while by the various other instinctive dispositions. . . . It has essentially to do with proximate rather than ulterior ends. Yet workmanship is none the less an object of attention and sentiment in its own right. Efficient use of the means at hand and adequate management of the resources available for the purposes of life is itself an end of endeavour, and accomplishment of this kind is a source of gratification.[1]

Later he avers that the "parental bent" is the main instinctive end which the workmanlike bent subserves (p. 48). Such are the consequences to which McDougall's conception of instinct may be carried; the instincts are elves which have various tasks to perform but have discretion as to the exact method of performance; the propensity of workmanship is a sprite of lower rank whose mission is to develop mechanical ways and means, — also in no predetermined manner, but always it must be economically, frugally, efficiently. Both ranks of propensities are identified partially by the subjective feeling-tone, — 'gratification.' What Veblen calls the instinct of workmanship is what other people have called intelligence.

It is true that the manipulative and inquisitive responses do subserve the parental; and so in fact does each instinct subserve every other by helping to keep the body alive. More than that, original grasping, etc., leads to a large part of our learning of the properties of objects, and hence is especially to be prized on that account. But when the instinctive manipulative and emulative responses are active (when 'workmanship' is undertaken 'as an end in itself'), then the other response systems are inactive. When the instinctive elements of the parental responses are active, some of these same manipulative or grasping reflexes must necessarily be brought into play, but the organization and the consciousness of the total response are quite distinctive. The most savage mother has learned many habits which are used in protecting and caring for her child.

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[1] The Instinct of Workmanship, pp. 31, 32.

Veblen sees the bias of instinctive workmanship running through all human societies, in the trend toward greater and greater mechanical efficiency. People instinctively want to do their jobs well, he thinks, without any waste, and they constantly search for better, more economical methods. This particular self-conscious instinct-elf is still further removed from our own conception of instinct, than is the workmanship-instinct conceived as a simple mechanician for the parental proclivity. The attitude of doing a thing well, though there be no profit in it, is a complex matter, much permeated with associations of approval from fellow-creatures, and embracing also the multitude of various innate mechanisms which make specialists supremely interested in their own particular activity.

This apparent drift toward economy of effort and the ceaseless development of human technology, we attribute to that human capacity for learning, for forming habits, for adapting our instinct-mechanisms to our peculiar situations, which is the chief glory of our race, rather than to any supposed improvement-instinct. If we had to depend entirely on our instincts, as our friends the shell-fish and insects almost do, our race might survive and perhaps we should all be happier,[1] but our technology would never change. Since our action systems happen to be plastic, and permit of wide learning, however, the human 'bent' toward economy follows from the attempts of all our instinctive or habitual want-mechanisms to act themselves out when stimulated, and the thwarting of part of them by the scarcity of desired goods in the world outside. This bent, clearly, is operative first of all through individuals, and so occasionally a man finds that the most effective way to satisfy *his own* wants is to prevent a number of other people from satisfying their wants, — that is, he seeks the largest measure of want-satisfaction for himself, rather than the largest possible social utility. Veblen's savage, whose workmanlike instinct is centered on economy for the benefit of the whole community, has much in common with the amiable savage of Rousseau.

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[1] See the fanciful narrative detailing the superior adaptiveness of insects in W. M. Wheeler, "The Termitodoxa, or Biology and Society," Scientific Monthly, 10: 113–124 (1920).

Similar considerations apply to Taussig's 'instinct of contrivance' but in less degree. The analogues of contrivance in the lower animals — the dams of beavers, the nests of birds, etc. — are clearly stable and inheritable, though very intricate, combinations of reflexes, adjusted to a limited number of stimuli in the creature's normal environment. All animals have some capacity for learning, hence these behavior-types are not absolutely stable and uniform, but the plasticity of behavior is so limited that the animals' technology varies little from generation to generation. Man's instinctive contrivance, on the other hand, is so quickly overlaid by the habits of experience, so soon assumes a bewildering variety of forms, that we cannot tell just what the instinctive kernel is. It is a little like the hypothetical instinctive basis of speech.

MEANING OF 'GENERAL INNATE TENDENCIES'

Nevertheless this conception entertained by so many social psychologists, of general innate tendencies or gifts or bents toward certain kinds of activity, in which the exact responses are not predetermined, has an important place in our psychological fundamentals. We have already spoken of aptitudes. An aptitude means here not a specific response to definite stimuli, but a certain limitation in the subject's range of educability, by physiological structures which are grosser than reflex circuits, — these grosser limiting structures being hereditary and varying between individuals. A few paragraphs from Woodworth state the situation concisely:

> That there are native capacities appears not only on comparing one individual with another, or one family with another, but by comparing the human species with animals. Language is characteristically human, while finding the way home is apparently a stronger aptitude in birds, especially. Counting and dealing with number relations are certainly human, as is the power of using objects as tools.
>
> Native capacities differ from instincts in that they do not provide ready-made reactions to stimuli. We do not expect the musically gifted child to break out in song at some special stimulus, and thus reveal his musical gift.

> We expect him to show an interest in music, to learn it readily, remember it well, and perhaps show some originality in the way of making up pieces for himself. His native gift amounts to a specific interest and an ability to learn specific things. The gifted individual is not one who can do certain things without learning, but one who can learn those things very readily.
>
> There would be little profit in attempting an inventory of this side of native equipment. We should simply have to enumerate the various occupations of mankind, and the various classes of objects in which he finds an interest, and in dealing with which he shows facility.[1]

Neither Woodworth nor any other psychologist, so far as we know, tells us what may be the neural basis of these abilities; but evidently it is to some degree provided by the hereditary organization of certain parts of the nervous system, which limit the number of connections or habits which it is possible for that individual to acquire in a given class of responses, or at least determine the facility with which new connections in that class can be acquired.

These hypothetical structures are to particular abilities, probably, what the cerebral cortex is to general educability as a whole. The animals (and some abnormal human beings) whose hereditary anatomical endowment includes an inferior cerebral cortex, are incapable of much learning; while normal man, with the larger brain, is the least limited of all animals in range of possible new reflexes, that is, of learning and acquiring new interests. No particular habit is determined by the size of the brain, but the general range of habit-formation is thus determined.

Now in certain connections a sociologist may generalize about ‘ the disposition of habit-formation ’ (which, we shall see, is but another name for trial and error, learning, reasoning, all at once) to good purpose. So also of the smaller ranges of educability, as the taste for music or for contrivance, or the spirit of enterprise or the talent for oratory. But what generalizations can accurately be made about any given one of these vague propensities, which are by definition an uncertain blend of nature and nurture, is a more difficult question even than the corresponding task with an instinct.

They are not instincts. But what does it matter which name we use? The main danger in social science from an uncritical use of the term 'instinct,' is that qualities characteristic of one instinct or appetite are liable to be freely generalized as belonging to all 'instincts,' and fallacious arguments may be drawn from this assumption. For example, it is now rather common to assume that all instincts are subject to the Freudian formulae of repression and sublimation — that if any one is baffled it will break out in nervous disorders, and that its motive force can usually be diverted into socially beneficial channels if you find the right substitutes.[1] Our discussion of the appetites of sex, hunger, exercise and so on, has shown that there are periodic chemical secretions in the body, or deficits connected with them, which render these *appetites* difficult if not impossible completely and permanently to repress, but such a condition apparently does not exist in others of the instinctive groups, such as attack and defense, fear, emulation, curiosity and manipulation or workmanship. The discomfort of monotonous labor may be due to the baffling of the latter instincts, but it may on the other hand be traced to fatigue of the special processes constantly employed and to the appetite for exercise of the others not used. The net result of the two explanations in this case, sociologically, happens to be much the same; but in other cases, as in the query suggested by Wallas, that perhaps the instinct of fear is being baulked too much in modern society, the results might be vastly different. The point is that the differing mechanisms of appetites, instincts and innate general aptitudes make it unsafe to carry over generalizations from one class to another.

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[1] *Op. cit.*, p. 59.

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[1] E. g., Wallas: "For we cannot, in St. Paul's sense, 'mortify' our dispositions. If they are not stimulated, they do not therefore die. If we leave unstimulated, or, to use a shorter term, if we 'baulk' any one of our main dispositions, Curiosity, Property, Trial and Error, Sex and the rest, we produce in ourselves a state of nervous strain." — Great Society, p. 65.

This doctrine, which has been popularized by the Freudian School, has been swallowed whole by a number of social scientists, such as Carleton Parker. J. M. Clark appears to accept it on Wallas' authority ("Economics and Modern Psychology," Jour. Pol. Econ., 27: 1–30). E. R. Groves, "Sociology and Psycho-analytic Psychology; An Interpretation of the Freudian Hypothesis," Am. Jour. Sociol., 23: 107–116 (1917) naturally says, "It is Freud's theory of the sublimation of instincts that most interests the sociologist," and he speaks of the instincts generally as "clamoring for gratification."

The distinction between instinct and intelligence, nature and nurture, is, after all, of great moment, for nurture is amenable to our control in a much different way than nature. For most purposes it is not serviceable to lump them together. The question is in each case, how many of the phenomena attributed to instinct are really the result of innate, inheritable and substantially ineradicable human behavior-mechanisms.

There is, of course, no need of keeping track of the minute elements if you are sure you have a stable and accurately definable higher unit. A shoe manufacturer need not bother about the separate tissues composing the human foot. A behavior-unit likewise, to be stable enough for sociological handling, need not consist wholly of instinctive elements, it may include such modifications thereof as the normal man's environment are sure to make; and it is clear that such a propensity as ' the desire to get the greatest wealth for the least sacrifice of goods or labor ' meets this specification pretty well. But if the behavior designated as ' workmanship ' or as the result of some other ' instinct ' is quite variable in different times and places, because the elementary responses are modified by diverse environments, then the concept of instinct of workmanship will be no more serviceable than its predecessors, the moral, religious or imitative instincts.

It would be desirable, before we leave the topic of the nature and number of instincts, to examine the Freudian contributions. But we shall discuss in another connection the more important points of this school's doctrines, and here it may be said that their inventory of instincts is the point of least agreement among themselves. They agree in attaching overwhelming importance to the sexual impulses, but if they admit independent motives, they talk vaguely of the ' instinct of self-preservation,' or the ' stream of desire ' or ' the libido,' to which concepts we have already paid our respects. It is the natural result of their reliance on subjective and gross behavior data, with little attempt to check up the neural correlates. Professors Holt and Watson have made notable contributions to psychology by interpreting the Freudian results in terms of modern physiological concepts.

CHAPTER X

EMOTION, PLEASURE AND PAIN

EMOTIONS BELIEVED TO BE CONSCIOUS CORRELATES OF CERTAIN INSTINCTS

WITH the modern theory of instinct-mechanisms in mind, we are now equipped to make some headway on the connection of the instincts with emotions, and with pain and pleasure, thus fitting our old friends the feelings into the structures of motives and action.

It is one of the merits of McDougall's book that he emphasized the important correlation between instincts and emotions. To him the principal elementary emotions are inseparable parts of the primary instincts, on the schemes we have already exhibited. He protests against definitions of instinct which run simply in terms of reflexes, for they leave Hamlet out of the play altogether. The conscious entity, or emotion, is the real nucleus of the instinct to him. He defines an instinct, therefore, as

> an inherited or innate psychophysical disposition which determines its possessor to perceive, and to pay attention to, objects of a certain class, to experience an emotional excitement of a particular quality upon perceiving such an object, and to act in regard to it in a particular manner, or, at least, to experience an impulse to such action.[1]

This ' psychophysical disposition ' is indeed based on "a compound system of sensorimotor arcs" (about which McDougall has little more to say in the book); but after the agent has pricked up his ears toward the exciting object, we are given to understand, his behavior can no longer be predicted from the most complete knowledge of the reflex arcs.[2]

The intimate connection between instinct and emotion had indeed been brought into prominence by James about 1885. An emotion, he believed, is a sudden complex of bodily sensations arising from our instinctive reactions toward appropriate stimuli. The sight of a ferocious animal coming toward us, for example, stimulates reflexly in us by means of our inherited neural connections, about the same kinds of reactions that the cat inspires in the mouse,—various twitchings and tremblings and movements of running away, palpitations of the heart, glandular actions such as perspiration secretions, also the various reactions which we describe as dryness of the throat, heaviness in the pit of the stomach, and others which we cannot localize. Reflexes of the vasomotor system, causing blushing and paleness, of the facial muscles, and of glands such as those secreting tears, are of course prominent in the expression of emotions.

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[1] *Op. cit.*, Ch. I, p. 29.

[2] This insistence on a quasi-intelligent, groping consciousness as an essential part of the general concept of instinct is rather general among the British psychologists who treat of the subject. Lloyd Morgan's phrase "persistency with

So that James said it is probably not true, as appears to common sense (and to some psychologists, as McDougall) that we experience the emotion in consciousness and then proceed to ' express ' it by appropriate actions; but we are angry because we strike (and have other simultaneous reactions), are afraid because we tremble and run away, are sorry because we cry. The reactions and the emotional consciousness, that is, occur at the same time, the latter being the complex of sensations arising from the former. That James, no less than McDougall, recognized the constant coördination of emotion and instinct may be seen from his (James') statement:

> Every object that excites an instinct excites an emotion as well. The only distinction one may draw is that the reaction called emotional terminates in the subject's own body, whilst the reaction called instinctive is apt to go farther and enter into practical relations with the exciting object.[1]

varied effort" is enlarged on by Stout, to the point that "instinctive activity essentially involves intelligent consciousness" (Manual of Psy., p. 347). At a symposium of British psychologists on instinct and intelligence in 1911, C. E. Myers said "To my mind, it is certain that on the occasion of the chick's first peck or the duckling's first swim the bird is dimly, of course very dimly, conscious of the way in which it is about to act" (Brit. Jour. Psy., Vol. III, pt. iii). Doubtless most of what these authorities say about "attention" and "interest" being correlated with first performances is true, but the "persistency" must be attributed, as we have explained, to the existence of several pre-established mechanisms which are successively aroused, unless "consciousness" is supposed to have a magic power of direction of action.

[1] Briefer Course, Ch. XXIV, p. 371.

Evidence Pro and Con

Recent studies have partially confirmed as well as amplified the James-Lange view. The experimental work of Sherrington, to be sure, seemed to show that dogs whose visceral sense-organs had been disconnected from the brain were still capable of experiencing emotion; but Herrick thinks the experiments were not very convincing.[1] Cannon's excellent investigations on the physiological basis of certain emotional states indicate that the bodily changes are the same in different emotions, and hence that the sensations from them cannot give the full quality of the emotion. It is not pretended, however, that Cannon or anyone else has reached an even tolerably complete analysis of all the reactions correlated with the emotions and so the James-Lange theory, with few amendments, remains the leading hypothesis. A number of psychologists, it is true, appear not to agree to the instinctive basis of emotions; for instance Stout says an emotion is "a unique kind of feeling-attitude towards an object."[2] But if such authors are pressed as to the neural correlates of this unique and innate consciousness, they will be driven to postulate some instinctive organization of reflex circuits. Without adopting any particular view as to the sensational or other elements in the emotional consciousness, therefore, we are fully justified in assuming that in some way the emotions are all underlain by instinctive responses.

A kind of evidence which the present writer has not seen considered by the authorities is the alternation he has observed of emotional states, which is strikingly, comparable to 'retinal rivalry' and analogous alternations of antagonistic responses. After a period of depression or elation lasting an hour or so, one finds his mood changing even though the situation has not altered. The responses of the first, apparently, have become fatigued, and so the others are released. (See below, Ch. XI, on alternation of responses in learning.)

Whether all or any instincts are *always* emotional is another question, and is a part of the general problem of the physiological conditions of consciousness. Some inherited reflexes, such as those of the heart and other viscera, involve no consciousness at all, and there are also habitual responses which were conscious at the time of learning, like the movements of writing, but which have ' decayed ' into unconsciousness except when the subject's ' attention ' is upon them. It seems possible that there are instinctive acts also which may become unconscious at times, such as eating, when the focus of the subject's activity is elsewhere. Professor Holt's suggestion, that one is always conscious of that object to which his body as a whole is responding [1] — be it the sound of the imaginal spoken words, the form of the marks on the paper, the movements of the pen, or the tree out of the window — is one of the most satisfactory statements of the relation, for such object clearly does correspond closely to the focal point of attention. Whether or not the emotion is experienced, then, when the instinctive apparatus is active, may be found to depend on the place the latter occupies in the subject's total response at the moment. In that case McDougall's theory of emotion as the true heart of instinct will be relegated to a purely subjective psychology.

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[1] *Op. cit.*, p. 288.

[2] *Op. cit.*, p. 418.

EMOTIONAL ' DRIVES ' IN MOTIVES

Now what place have the emotions in human motives? Are they the drive *behind all action*, as has been proverbial, while the reason or intelligence is merely the directing agency? Are the two respectively the ' gasoline ' and the ' steering-gear ' ? [2] From our discussions it is clear that the emotions as conscious states cannot be regarded as motive powers, without resort to the mystical principle of interaction between radically different entities called ' mind ' and ' body.' But the general opinion that emotions are powerful (not necessarily the only) movers to action is verified when we investigate further the physiological mechanisms of them, that is, of the instincts.

Cannon found [3] that the reactions which he studied, connected with emotional excitement, are such as put the body into a state of extra preparedness for strenuous efforts. Experiments revealed that in fear, pain and rage the adrenal glands are stimulated reflexly to secrete their specific product, adrenalin, into the blood, where in turn it stimulates an outpouring of sugar from the liver into the blood, and it also hastens the coagulation of blood in the case of wounds. Such sugar-secretion is the form of stored energy which can be most quickly used to replenish exhausted muscles, and so the muscles under emotional conditions are able to work longer and harder without arrest by fatigue than normally. Other reactions in these states, and also in worry, are the stopping of digestive movements and gastric secretions, as well as the diversion of blood from the abdomen to the heart, lungs, central nervous system and limbs. As Cannon says, "Every one of these visceral changes is directly serviceable in making the organism more effective in the violent display of energy which fear or rage or pain may involve." [1] (On the other hand, it is obvious that many of the instinctive reactions are detrimental to effectiveness, as the trembling and inhibition of movement in fear.) Similar reactions were observed in students in athletic contests and previous to examinations. Some of these reactions were even brought about artificially, by the injection of adrenalin.

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[1] See the Freudian Wish, Supplement, pp. 172 ff.

[2] The old-fashioned metaphor was "Reason the card; passion the gale."

[3] W. B. Cannon, Bodily Changes in Pain, Hunger, Fear and Rage (1915).

Such are some of the obscure processes which coexist with emotions, and make the well-known extra physical force of the latter intelligible on physiological grounds. There are numerous anecdotes to the same effect, as the boy who jumped a high fence when pursued by a bull, and the man Darwin tells about who worked himself *into a passion* preparatory to doing some extra hard tasks. Watson and Morgan add a more scientific instance by demonstrating that an infant can hold itself suspended by grasping a rod for a longer time when it is made angry than when it is at peace with the world.[2]

[1] P. 216.

[2] *Op. cit.*, 'Emotional Reactions,' etc., p. 170. An interesting suggestion arising from these recent studies of emotional behavior is that the complexes of preparatory reactions thus aroused instinctively by the mere perception of the appropriate object (of fear, rage, love, etc.) strongly suggest the inheritance, at some state in the race development, of acquired habits or "conditioned reflexes." The various responses making up the emotion are such as would be aroused serially as the situation develops, say in a fight; and their arousal all at once instinctively by the distant pros-

PAIN AND PLEASURE BELIEVED MINOR EMOTIONS

So much for the major emotions. Now what of pain and pleasure, pleasantness and unpleasantness, whose pricks we are nearly always feeling and which apparently are driving us to action? Can we correlate them with bodily processes too? That question is even more controversial than the corresponding one concerning the emotions, but the trend of expert opinion seems to be toward the same explanation for both classes of feeling. We cannot quite say that emotions are algedonic (affective) feelings grown tall, because the classes of emotions and feelings overlap, — all emotions are pleasant or unpleasant, but not all pleasant or painful feelings are emotions. The lesser feelings which are not called emotions, however, are probably correlated with neural processes similar to those underlying emotions. Unpleasant feeling and emotion, on this theory, is the conscious correlate of complex instinctive reactions, including such visceral and other changes as we have seen in emotion, which responses in general are in the negative direction of avoidance of danger to the subject, of reaction away from some harmful source of stimulation. Pleasant feeling and emotion on the other hand, attend the instinctive response-complexes which are usually in the direction of beneficial stimulation, at least in the positive direction of tolerating or prolonging the stimulating situation.

Introspectively, the lesser hedonic feelings undoubtedly have much in common with the emotions. Annoyance, dejection, grief, for instance, all involve similar uncomfortable inner sensations. Both classes clearly appear to furnish motive ‘ drives ’ toward or away from their objects. As we know, Cannon found substantially the same inner changes connected with pain as with fear and rage. Yet psychologists have been slow to group the two kinds of affective consciousness together. The reason is that the instinctive expressions of the emotions are more vigorous, and, to outward appearance, are more uniform throughout the human

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pect of such a consummation as a fight is analogous to the acquired complex of preparatory eating-responses (especially secretion of saliva) at the sight of food. See H. W. Chase, "On the Inheritance of Acquired Modifications of Behavior," Am. Jour. Psy., 28: 175–190 (1917).

race, than the physiological concomitants of minor pleasantness and unpleasantness. It was long supposed that a feeling, like a sensation, was the termination of its stimulation; and if any action came of it, the act was initiated by the will, after due deliberation over its various provocations. Hence McDougall tacitly denies that the feelings are in any way related to the instincts, for he explicitly denies that they are springs of action. He even fails to mention them among the ' universal tendencies of the mind ' among which he includes habit-formation,[1] though he repeatedly ascribes to them power of prolonging or inhibiting instinctive actions and thus of shaping habits.[2]

The imperious impulse to end a painful or unpleasant situation, and the strong tendency to prolong a pleasant one, are so universal and so obvious that philosophy and common sense have always taken those powers of pain and pleasure for granted; they did not know the physiological processes involved, and were content to ascribe mechanical efficiency to these states of mind until Bain began to wonder how it happens. We have seen something of the interminable controversies over hedonism — when is pleasure not pleasure, or higher and lower pleasures, and what not — that resulted from the interactionist formula. And modern psychologists who do not believe in interaction, drop into interactionist assumptions when they talk of pleasure ' stamping ' a new movement into a habit, and pain ' stamping ' it out.[3]

The wide differences of detail, among pleasures and pains, are an obstacle to any theory. The pleasures of a good dinner and of a good deed, or the unpleasantness of an aching tooth and of discovering we have used the wrong fork at a dinner, to use standard illustrations, seem to have little enough in common, especially when we learn from physiology that pains from the teeth, from the skin and from some other tracts are definitely correlated with certain nerve-endings, — they are true sensations. Those pains are not invariably unpleasant. But pleasant experiences all have one character in common, the general attitude of the subject. He will want to prolong them, or will not be inclined to avoid them. Unpleasant experiences he will end as quickly as he can. These are the common characters which really exhaust the meanings of the words.[1] These attitudes moreover, are as innate as the qualities of sensation. We do not learn to shrink from pain, though we learn which things are painful and thus are to be shrunk from.

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[1] *Op. cit.*, pp. 115–116.

[2] E. g., at p. 43.

[3] See Watson's collection of such instances from Thorndike, Judd, Angell, Ladd and other authorities in his Behavior.

PHYSIOLOGICAL CORRELATES OF PAIN AND PLEASURE

Looking beyond these gross behavior characteristics, psychologists and physiologists have been giving much attention in recent years to the question of the physiological correlates of pain and pleasure, with the result that there is a large and contradictory literature.[2]

The theories are of two general types. The first assumes that affection or feeling is a diffuse kind of sensation, correlated with special rudimentary sense-organs which have not as yet been discovered. The other holds that it is a matter of the internal economy of all the neurons involved in the response which is felt, as a whole, to be pleasant or unpleasant. The second type thus dispenses with the undiscovered sense-organs, and it has some advantage in cases where the same experience is at times pleasant, at other times unpleasant. Experiments show that numerous sensations, odors for example, pass from pleasantness to unpleasantness as their intensity is increased, and tasks which are agreeable at the beginning are often disagreeable at the end.

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[1] James Mill gave about the above account of pain and pleasure, but his statement "A man knows (the difference) by feeling it; and this is the whole account of the phenomenon" (Ch. XVII) is not quite accurate. The difference in attitude is evident in the man's behavior, quite apart from appeal to his consciousness. Thorndike's first approximation of "satisfying" and "annoying" is also in terms of this duality of attitude and he points out the necessity of resorting to minute physiological analysis because "successful operation," or other gross behavior explanations always return in a circle to satisfyingness or annoyingness itself (Original Nature, etc., p. 123). Cf. Titchener, Textbook, Sec. 72; Holmes, "Pleasure, Pain and the Beginnings of Intelligence," Jour. Comp. Neurol. and Psy., 20: 145–164 (1910), and Stout, *op. cit.*, p. 327.

[2] The literature up to 1908 is summarized by Max Meyer in "The Nervous Correlate of Pleasantness and Unpleasantness," Psy. Rev., 1908, pp. 201 ff., 392 ff. More recent discussions are in Herrick, Neurology, Ch. XVIII, and in other references mentioned below.

Spencer regarded pleasure as the "concomitant of heightened nervous discharge," and pain the concomitant of lessened discharge; in which theory he was followed by Bain and Baldwin.[1] H. R. Marshall in 1893, connected the two states with surplus or deficit of nutrition in the neurons, making fatigue the decisive factor.[2] Max Meyer and Warner Fite [3] consider that it is a question of reinforcement or inhibition of neural currents by responses innervated at approximately the same time. Thorndike's theory hinges, like Marshall's, on the nutrition or other internal conditions of the neurons.[4]

Theories of this type all have their special merits and special difficulties, though doubtless fatigue is an important factor in many states of unpleasantness. The discovery of independent pain-sense-organs, moreover, has given encouragement to the type which considers affection as a quasi-sensation, — this type of theory also being congenial to the doctrine of sensationalism (that all consciousness is derived ultimately from sensations). Stumpf was an early champion of it, and Titchener and Watson are among many contemporary exponents.[5] Knight Dunlap has recently suggested that the James-Lange theory should be extended to include feeling, as Dunlap believes feeling is correlated with obscure bodily changes, including stimulation of nerve endings in the muscles of the blood vessels, alimentary canal, ducts of larger glands, etc.[6] He points out that some sensations, as those of hunger, are undoubtedly from inner stimulation and are not referred to any particular place; which fact gives the hint that the difference between sensation and feeling is only a matter of spatial localization. The unpleasantness of fatigue, we may add, is perhaps due to stimulation of special sense-organs by the toxins of fatigue. In connection with any theory of the sensational type, we must remember that the impulse from the sense-organ has to get out and produce response.

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[1] Holmes, *op. cit.*, pp. 152–154.

[2] His book is entitled Pain, Pleasure and Esthetics.

[3] W. Fite, "The Place of Pleasure and Pain in the Functional Psychology," Psy. Rev., 10: 633–644 (1903).

[4] *Op. cit.*, Ch. IX. Cf. pp. 227, 228.

[5] Titchener, Textbook, Sec. 74; Watson, *op. cit.*, Ch. I.

[6] "Thought-Content and Feeling," Psy. Rev., 23: 49–70 (1916).

How does it happen that these inner stimuli of pleasantness are given just in connection with an outwardly pleasant situation, and that only the unpleasant inner stimuli are given by the muscles and glands when the outer conditions are annoying?

Whether the immediate neural correlate of feeling is a special reflex or a condition of the neurons of the general response, it seems clear that the correlate is part of the preorganized instinctive response pattern adjusted to the outer situation. This conclusion is inevitable from the universal connection between pleasantness and seeking responses, etc. If we follow the James-Lange lead tentatively, we shall go farther and say that in all groups of responses to ' annoying ' stimuli there is a common group of inner reactions whose unlocalized consciousness has the quality of unpleasantness. The response by original nature to the annoying object ' a hot iron,' for instance, is partly the jerking away of that part of the body which has touched it; this reflex is protective and instinctive, but it is not all of the response. There are the concomitant inner reflexes of the blood vessels, glands, etc. Cannon has demonstrated some of these inner reactions in pain — we should never have suspected their existence from mere introspective evidence — and undoubtedly there are many more yet to be found. With experience, the original responses are extended by habits, and then our outwardly observable movements in the painful situation are different from the original response, but the instinctive inner complex of sensations that is characteristic of pain, remains.

When the situation is called not painful but merely unpleasant, as in embarrassment, the outer part of the instinctive response is the facial expression of annoyance and probably the movements and posture we call cringing or shrinking; but these are soon overlaid by habits. The inner reactions, however, remain similar in all people at all times; there are vasomotor changes (blushing or paleness), variation in the heart action, responses in the throat and stomach which give sensations of dryness, heaviness, etc., and many others, known and unknown. Wundt was one of the first psychologists to investigate, by registering instruments, the changes in pulse, respiration, temperature and so on which accompany the affective consciousness. If the situation is of a certain crucial kind, the responses become so vigorous and complex that collectively they are called an emotion. The pleasant emotions, like other feelings, are usually correlated with outward responses welcoming or seeking beneficial objects, as in love; and the unpleasant emotions, like fear and rage, are connected with movements to avoid or repel harmful objects. All contain a host of inner reactions, as we have seen, and we must assume that there is enough overlapping of these — and perhaps also among the outwardly observable reactions — to give to one class its common character of pleasantness, and to the other its earmark of unpleasantness.

Two objections may occur to the reader, which may be cleared up. It may be said that all pleasant objects are not beneficial (and that further, some repelling reactions are pleasant, as sometimes in pugnacity). But the theory correlates the feeling with the seeking or avoiding response rather than with the ultimate effect of the object on the subject. What we do strive for is pleasant to us, be it saving grace or moonshine whiskey, and in a rough way, by natural selection, the surviving species have come to like and seek what is good for them. And the ferocity which is pleasant is that of the hunt; real rage such as comes from obstruction is unpleasant enough. It may further be objected that not all reactions are pleasant or unpleasant; some are indifferent. That is quite possible, according to the theory, for unless a reflex is connected (either instinctively or by habit — ' association ') with an innate group of the feeling-reactions and so arouses them when it is aroused, it will be indifferent as to affective tone. Whether or not there are any such isolated responses may be determined in the future, without making any difference to the theory.

There are many other disputed points which must be left to the experts. Since the most crucial part of the problem of feeling is the question of neural correlates, we quote the bulk of the summary of a recent discussion of pain and pleasure by the neurologist Herrick, which leans strongly in the James-Lange direction:[1]

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[1] The trend is so marked throughout modern physiological and behavior psychological literature, that the present writer had reached these views before he read Herrick.

> In the human organism pain appears to be a true sensation with its own receptors, probably with independent peripheral neurons (in some cases at least), and certainly with well-localized conduction paths and cerebral centers, these centers being thalamic and not cortical. Pain appears to be closely related neurologically with feelings of unpleasantness and pleasantness, and these, in turn, with the higher emotions and the affective life in general. . . . Pleasantness and unpleasantness are not regarded simply as attributes of specific sensory processes in any case, but rather as a mode of reaction or physiological attitude of the whole nervous system intimately bound up with certain visceral reactions of a protective sort whose central control is effected in the ventral and medial parts of the thalamus. . . . This mechanism is phylogenetically very old, and in lower vertebrates which lack the cerebral cortex it is adequate to direct avoiding reactions to noxious stimuli and seeking reactions to beneficial stimuli. With the appearance of the cortex in vertebrate evolution these thalamic centers became intimately connected with the association centers of the cerebral hemispheres, and an intelligent analysis of the feelings of unpleasantness and pleasantness became possible. . . . In the normal man these mechanisms may function with a minimum of cortical control, giving the general feeling tone of well-being or malaise, or they may be tied up with the most complex cortical processes, thus entering into the fabric of the higher sentiments and affections and becoming important factors in shaping human conduct.[1]

The statement that pleasure and pain and emotion are always the *results* of reactions is an affront to common sense, which unhesitatingly declares, with the association psychologists, that ‘ the idea of pleasure ’ is what prompts us to action. The latter statement, like others involving interaction between the mental and the material, is true enough for a good many purposes; but if we have the physiological series complete in our minds, we shall come to know more accurately under what conditions, what ideas of pleasure, lead to what actions; and hence provide for better control of human behavior. Our reconciliation of the two points of view, then, is as follows: We take pleasure in things originally because instinctively we seek them; but once we have experienced the pleasure, its recollection does undoubtedly induce us to repeat the action. But now we are slipping a psychical link into the chain, — how can the "recollection of pleasure" (substantially the same thing as the "idea of pleasure") act on our nerves and muscles? This question makes necessary an examination of the fundamentals of the learning process, for the influence of experience just described is the result of acquired mechanisms, not wholly of innate reflexes. How the mechanisms of pleasantness and unpleasantness coöperate in setting up new mechanisms of habit (and therefore of motives), is a problem full of interest to us. Unfortunately there is small agreement on it among psychologists, but the foregoing conception of feeling enables us to fit the facts of consciousness into the facts of behavior and physiology with considerable success.

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[1] C. J. Herrick, Introduction to Neurology, 2d ed. (1915, 1918), pp. 289–290.

CHAPTER XI

THE LEARNING PROCESS

We have now taken stock in a general way of the original nature of man, so far as concerns his motives to action; and we have found that the appetites, instincts, emotions, pleasures and pains are all based on an inherited behavior-equipment, which consists of the sense-organs, muscles, glands, with reflex neural circuits connecting them into instinctive responses. To this conclusion we are led, whether we consider the emotional and affective consciousnesses as complexes of sensations — each sensation being correlated with a certain partial response — or as unique entities linked with the organism's gross behavior. We must now consider the means by which new behavior-mechanisms are acquired to supplement the innate, and thereby to perfect the living creature's adjustment to his own special surroundings. In brief, we shall examine the learning process.

Elements of the Problem

Some baffling psychological questions are soon encountered. The tutoring influence of pleasant and painful experiences, for example, are evident to anyone's general observation, but the difficulty of accounting for the matter in terms of new neural pathways is so great that few psychologists yet agree as to what part pleasure and pain do play in learning. A somewhat comparable problem is presented by 'association of ideas' — how do *ideas* take effect on flesh and bone? Then if we remember the emphasis laid on habit by the 'functional psychologists,' we wonder if habitual mechanisms can be prime movers to action, or if McDougall is right in tracing all their drive to the instincts. We do seem to have many habits like dressing or buying or voting in certain ways, to which we are slaves long after the original interests which established them have passed away. And if a habit may be a prime mover, what are the limits within which such artificial motives can be acquired? How do some lines of action become so fixed upon us as to be matters of principle or conscience? Presently we reach the puzzle of voluntary and rational action, which is apparently a matter neither of instinct nor of habit. Voluntary behavior evidently is influenced greatly by pleasure and pain, but by pleasures and pains which are in the future, and which may never have been experienced by the agent or anyone else, — only inferred rationally. How can this be?

Difficult as are these problems, we shall find that they can be connected up with the innate motive-elements which we have been considering, and the whole system made fairly intelligible, if we have recourse again to their hidden common denominator, the nervous system.

Habit and Association of Ideas — Two Sides of the Same Process

Let us begin with habit and association of ideas. The phenomena of these two entities of different planes are strikingly similar. A habit, which is a matter of performing a certain chain of *acts* in serial fashion, is acquired and gradually perfected by frequent repetition of the acts in the same order; an association of ideas such as the learning of a poem, is acquired and strengthened in just the same way. In both cases it is necessary that the elementary acts or ideas be experienced closely together in time. *Contiguity*, therefore, is a principle governing each process, as well as *frequency*. Sometimes when there is sufficient affective feeling involved, contiguity alone will firmly establish either a habit or an association, — a burned child dreads the fire. Both in habit and in association too, *recency* is an important principle; they both decay with disuse. Again, association by *similarity* is paralleled by the performance of habits at the wrong cue, as when a man pulls out his latchkey on his friend's doorstep.

There is even another suggestive resemblance. In most habits, as James remarked, the execution of one of the constituent reflexes serves as stimulus to the next one, and so on to the end of the series. Outer stimuli, of course, are likely to give some of the cues, but in walking, playing the piano, or performing any athletic game skillfully, the ' feel ' of it, or the kinesthetic sensations, are most important. The existence of kinesthetic sense-organs in the muscles has been verified by anatomical research, and their importance both in the learning process and in one's general consciousness is very great. Watson demonstrated, for example, that rats form the habit of treading the Hampton Court maze in the most direct manner possible in order to get food, chiefly under guidance of the kinesthetic sense. If an alley is suddenly shortened, the rat will bump into the wall; and if he is blinded he will learn the maze almost as readily as when he has the advantage of sight.[1] This playing-out of a chain of responses, all within the animal, so to speak, is comparable to the process of associative recall, when idea follows idea without reference to outer stimuli.

Observe now that all these correspondences between habit and association of ideas are just what would be expected upon the hypothesis developed above, that the image is simply the revival of the original response at a low tension. It has long seemed probable to psychologists — for instance to Bain and James — that the same 'tracks' in the brain are active in recall as in original sensation, and the more recent doctrine, that the whole reflex circuit is in some degree active when an image is experienced, is only a slight modification of the older view.

There is one divergence between habit and association which when fully considered, bridges the gap between the association psychology and the modern 'functional' systems. Association of ideas *ex hypothesi* is always conscious; while the acting-out of a habit is frequently unconscious. But the introspectionists have always been puzzled by intermediate ideas dropping out of consciousness in associative recalls, and by the phenomena of ' unconscious judgments.' As we have seen, Hartley and the Mills emphasized strongly this disappearance of ' unimportant ' linking ideas, because it obscures the associative origin of many beliefs and desires. Then we must remember that any habitual action may be performed consciously if the subject ' gives his attention to it,' and so far as physiologists know, without any different mechanism of response being used. According to Professor Holt, giving one's attention to it simply means that this response for the moment stands at the apex of all the body's activities. Though ideas can never be unconscious, therefore, there are frequently unconscious links associating them, and these links seem to correspond to habit-mechanisms which are subordinated to the focal activity that appears in consciousness.

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[1] Behavior, Ch. VI.

The upshot of it is that laws of habit-formation are laws of association, and are, in fact, laws of learning. The correspondences we have cited establish that point without regard to any particular theory of consciousness. We may find even that the laws of habit are also the laws of reasoning. This relationship explains why a group of intelligent men are spending so much time nowadays upon ingenious puzzle-boxes for cats, mice, monkeys, guinea-pigs and many other lower creatures. The principles learned in those simplified cases enable us to understand the fundamental facts of human learning, and the human complications can then be handled with less bewilderment.

Principles of Habit-Formation or Learning

We shall attempt now to summarize more exactly the conditions of habit-formation or learning, for the sake of their bearing on the problem of rationality.

Contiguity or Conditioned Reflex

The most fundamental principle we may call simultaneity or contiguity. A connection of more or less facility may be established between any two reflex circuits which are active at the same time, or closely following one another, so that on the next occasion when one is aroused, the impulse will spread to the other and arouse it too. This fact is fundamental to the 'conditioned reflex,' which is in turn, at the bottom of habit-formation. We must not think that the neural paths of the instinctive reactions are isolated like a number of insulated wires, for the neurons in the central nervous system possess wandering branches and are so situated that the physiologists consider that "every part of the nervous system is in nervous connection with every other part, directly or indirectly."[1] These intertwinings, which make a variety of connections possible, are especially numerous in the cerebral cortex; hence the importance of the latter's size as an index of intelligence. The connections which exist among them all at any one time, however, offer greatly varying degrees of resistance to nerve-impulses, and the resistance between the central elements of two previously-established reflexes is somehow lowered and worn down when the two are active at the same time.[2]

Some classical experimental work on the conditioned reflex was done by the Russian physiologist Pavlov (German spelling Pawlow), twenty years or more ago. He arranged methods of registering automatically the flow of saliva and gastric juice in the dogs upon which his experiments were conducted, and then gave the dogs food simultaneously with various other stimuli. The latter were lights of different shades of color, tones of different pitches, etc. Before its association with food, the light or color of course would bring no salivary reflex, but when the dog had experienced the light and food together a few times, then the light by itself would start the flow of saliva. Upon such a secondary or conditioned reflex, further conditioned reflexes could be built. If the light previously associated with food and a certain sound-tone were given a few times together, with no food at all, then the tone by itself would bring the salivary reflexes.[3]

Mankind has always been familiar, of course, with the 'mouth-watering' phenomenon in connection with the sight or thought of food; and a multitude of other associative responses have for ages been commented on before these exact, quantitative observations were thought of. We all acquire responses to whistles, bells, pictures, colors, names, flags, scenes, simply by virtue of their having been presented in temporal contiguity with some stimulus which was at the time intrinsically interesting to us. The grandest example of all, as James Mill knew, is language. The spoken words are all just so many conditioned reflexes, acquired first through simultaneous pointing or other appropriate gestures, and later compounded one on another; written language is the same process over again, building upon the sound responses. Association by similarity is a little different. It means that one aspect or element of a former situation, being presented in a slightly different context, is responded to in the same manner as the first whole situation was responded to, — the differing elements being ignored or not responded to at all. The doorstep and lock elements call forth the response of reaching the key, in the example given by William James.

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[1] Herrick, *op. cit.*, p. 69. Sherrington has made a similar statement.

[2] It is not a matter of absolute simultaneity, since any reflex is active for a period of some seconds. Contiguity is therefore the better word.

[3] Summary and references in Watson, Behavior, Ch. III. Watson has superintended some similar work, partly on human subjects, in this country, using reflexes such as the foot-jerk to build on. See his report in "The Place of the Conditioned Reflex in Psychology," Psy. Rev., 23: 89–116 (1916). The work in animal behavior by Thorndike, Yerkes and others has been to the same effect except that habits rather than single reflexes were studied. As Watson says, all habits are made up of conditioned reflexes.

Frequency

This lowered resistance at interconnections of two reflex circuits which are simultaneously operative, therefore, is the first condition of learning, and the larger the association area the greater the possibilities of new associations or learning. The next important principle is that of frequency; the resistance at any synapse or neuron-junction is worn further away with each passage of impulse through it. The metaphor commonly used is a road becoming worn smooth by travel. The physiological facts of the synapse are still very obscure,[1] but there is no question that learning is a matter of lessened resistance at these connecting points. We must add the ingenious and significant point of Watson that the successful movement, in trial and error learning, is the one which by mathematical probability will most frequently occur, since it always ends the series and hence always occurs, while any wrong movement will not necessarily occur in each trial series.[2]

Persistence of Efforts

We need now to examine the persistence of effort, and the ‘ trying out ’ of various responses, which characterizes most learning-series in their early stages. We are constantly exposed to multitudes of stimuli, but we form habits with regard to but few. Some of the associations formed by any animal are accidental, due to the recurring scenes and events which happen in his native locality, but most of them are connected with his own bodily cycles, — his appetites, which goad him periodically into activity until the material is found which chemically quiets them. One of these appetites is hunger, and for its satisfaction every animal is equipped with intricate food-getting instincts, which usually become operative when the food is sensed. Perhaps all instincts have a sort of appetite for exercise all their own, when their constituent nerves and muscles are well stocked with energy, but most of these constituents are used as members of other responses, and apparently the ' keep trying ' behavior is not chiefly due to the instincts themselves. It is rather due to the continued stimulation of appetite from organs which are in want of relief by nutrition or outlet of energy. In situations of fear and pugnacity there are likely to be continued stimulations from the feared or hated object. Such is the case in simple learning by the lower animals or by the human infant.

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[1] Herrick, *op. cit.*, Ch. III; C. S. Sherrington, The Integrative Action of the Nervous System (1906), Ch. I.

[2] *Op cit.*, Ch. VII.

But in higher learning, when the agent possesses a number of complex responses, each composed of several innate affective elements and various acquired habits, the mechanism of persistence on the ' problem ' is much more difficult of analysis. A large response like this requires some time for its execution, by nervous impulses spreading from the first reflexes to the later ones, and it is toward the innervations given by the first reflexes, apparently, that we must look for much of the drive toward trying, during the selection of later ones. We shall return to this matter later, for we believe that to use the same theory in explaining such different drives as the ' trying ' of the cat to get food, the student to solve a mathematical problem, and the artist to paint pictures, as Woodworth[1] and many other students do, is to beg one of the main problems of the learning process.

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[1] *Op. cit.*, pp. 120 ff.

MULTIPLE REACTIONS TO SAME (GENERAL) SITUATION

Assuming that our organism will keep up some kind of activity until he gets food or some other means of stopping his stimulations, the next question is what determines the kind of attempts he will make. We can find in the writings of Thorndike, Yerkes, Watson and many other comparative psychologists, records of the actual movements made by cats, mice, birds, fish, what not, in various kinds of puzzle-boxes which had to be solved for the creatures to get food or to avoid punishment. These experiments are repeated until the animal learns the trick, and a curve is made to show his rate of progress. Somewhat similar records exist for the much simpler trials of certain single-celled creatures, in the writings of Jennings and a few others.[1]

The animal is stimulated to continual activity by his hunger and the sight and smell of food which is beyond the bars of his box. The box can be opened by turning a lever, pulling a string, digging through sawdust to a hole in the floor, etc. If the animal is in a maze, the problem is to avoid the blind alleys. The creatures respond to the unfamiliar situation by giving their instinctive and acquired reactions, first to one feature or partial stimulus and then to another, often coming back to the same unsuccessful attempt. The cat or rat will explore the sides of the cage, clawing, biting, beating the bars. The rat will instinctively burrow through the sawdust in a random direction, and in the maze he will often explore every inch of the floor space in the first few trials.

After a number of failures, the right combination of responses is finally hit upon, and the food is obtained. On successive occasions, as the animal is confronted with the same problem, he avoids more and more of the unsuccessful acts, and the time in which he can cope with this particular situation whenever he meets it is greatly reduced. The rat will take seven to eighteen minutes to solve a simple puzzle-box on the first trial, but on the second trial the time is reduced to two to seven minutes, and on the third to less than a minute. The same animal in the miniature maze requires thirty minutes for the first solution, while after a few trials he makes the trip in half a minute, ignoring all the false turns.[1]

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[1] See Watson, Behavior, Ch. VI, for a summary of many of these results, and much illuminating comment on the theory involved.

These lower animals, like ourselves, in many cases never learn to eliminate *all* the unnecessary acts, for a useless link is strengthened by frequency just as much as a useful one. The fact that the necessary acts always have to be performed before the appetite is stilled, whereas the unnecessary do not, gives to the former a general preponderating frequency. We find in substantially all organisms, then, a multiplicity of reaction possibilities to the same (large) situation to which as a whole, no instinctive response is adequate. If any combination of its ready-made reactions can succeed in appeasing the appetite, then the creature may learn through trial and error to make that successful response whenever the situation is presented to him.

To consider these multiple reaction possibilities as different responses to a single stimulus, however, would be the mark of a primitive psychology. We must believe that every stimulation-current passes through predetermined channels to produce definite muscular or glandular tensions, which channels (synapses of least resistance) are fixed by heredity or by previous learning. As Thorndike says, the vague theories of general nervous overflow are no-wise in line with the other facts of psychology. The multiplicity of reactions to the same general situation, then, depends on two sets of factors, — the differing physiological states of the organism, and the number of separate stimuli which the external situation as a whole contains. We may find varying responses to an identical particular stimulus, as Jennings did with protozoa, due presumably to varying degrees of fatigue in the response mechanisms. After the instinctive response which is determined by the most open neural path has been given, if the same stimulus is repeated, the resistance at the synapses in this circuit is increased, so that the impulse breaks into a path which was less open than the first when the first was fresh.[2]

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[1] Watson, Behavior, pp. 191, 211.

[2] This is an oversimplified version; the facts of fatigue and adaptation in the nervous system and sense-organs are quite obscure. But depletion of stored energy

But we are more likely to find the case of responses to different stimuli in the same *general* situation, at least to different combinations of stimuli. As the cat in the cage tries out and fatigues one response after another, the stimuli from new aspects of the situation — different bars, the lever, different spaces between the bars — successively gain admission to her senses and are given attention or responded to. In figurative language we say that the animal ' tries its repertoire ' of tricks, but this statement, unless

undoubtedly does alter the balance of power among the responses. Joseph Peterson suggests as a principle of learning that, in a baffling situation, several contradictory responses are stimulated at once, so that when the first one tried fails to achieve success the others are completed without opposition ("Completeness of Response as an Explanation Principle in Learning," in Psy. Rev., 23: 153–162 (1916)).

There are several groups of phenomena commonly described as adaptation which have distinct physiological characteristics. Many of them are clear cases of habits, with the peculiarity that the native response becomes dissociated from its original stimulus, as when an animal learns not to be frightened at a given object as the latter becomes ' familiar.'

A variant of this case is referred to when we say we have come ' not to notice ' the clock ticking in our room or the cars going by our doors. Probably we continue to respond to these stimuli, but the responses have worn to unconsciousness, as is the case with many habits; though it is possible that inhibiting responses have been developed which normally prevent stimulation by these recurrent disturbances.

The adaptation of sense-organs to continued stimulation at a given time, which may be found an important factor in learning by causing different responses to be successively tried out, has been illuminated recently by some experiments of Selig Hecht, described in "The Photic Sensitivity of Ciona Intestinalis," Jour. Gen. Physiol., 1: 147–166 (1918) and "Adaptation in the Photosensitivity of Ciona Intestinalis," Science, N. S., 48: 198–201 (1918). Hecht recorded the reaction-times of this simple marine animal to light stimulations of varying intensities for varying times and at varying intervals, and the results are strongly suggestive of certain inorganic chemical reactions. Light energy apparently decomposes the sensitive substance in the animal's ' eye-spot ' into a precursor substance, which reaction releases its response; but as by continued stimulation the sensitive substance is decomposed faster than it can be reformed, a larger and larger amount of precursor must be formed to produce response. Finally an equilibrium is reached when no response results from stimulation, and the animal is ' adapted to light.' When it is placed in darkness again, the reaction automatically reverses (apparently), as happens in several known chemical reactions, and the precursor decomposes into light-sensitive compound again. Both adaptation and recovery of sensitivity were proved by Hecht to be exactly a function of the time (of stimulation or its absence respectively), which would be expected if it were a reversible chemical reaction. The experiments thus point to a chemical foundation for the Weber-Fechner law.

Sherrington, however, has shown evidence that fatigue is localized at the synapses in the central nervous system, and this explanation may fit the analogous phenomenon of adaptations.

we are on our guard, harbors a ghost-soul who is directing the trying just as a little man would if placed in control of the animal's behavior-mechanism. If we can account for the facts without resort to such an entity, we shall evidently be much further on the way toward control of behavior.

Antagonism and Reinforcement Among Responses

There is another group of neurological facts which are important in learning, but about which little need be said here, as the interpretation of them is not yet clear. We mean the facts of antagonism and reinforcement between different responses in the same body. Some responses involve the use of a common set of effectors in the same direction, and so if both are simultaneously stimulated, the response will usually be more vigorous than if either is given singly, somewhat as a man will ordinarily do more for money and honor together than for either alone. But some responses use the common effector in opposite directions, which means that they cannot both act at once, — the eye cannot move to right and to left at the same time. The work of the English physiologist Sherrington [1] on these relations between responses has attracted universal attention among physiological psychologists. Holt thinks that stimuli which incite to contradictory courses of action simply neutralize each other and are not attended to,[2] but in many cases there is a response in one direction and then a sudden shift to the other, as in our interpretation of an ambiguous diagram. And so Woodworth includes these facts under the head of "Mutual Exclusion of Alternative Responses," pointing out that the neural mechanisms are such that different responses to the same general situation are tried out one at a time, and not on any parallelogram of forces principle.[3]

Mode in which Pleasure-Pain Influences Learning

Finally we must dissect the influences of pleasantness and unpleasantness on learning. This subject, because of the disputed nature of feeling itself, is in a very unsettled state. Common observation has always shown that pleasant rewards tend to form and confirm habits, while punishment tends to repel an association or break up a habit. Thorndike, among others, has long held this ' law of effect ' to be a principle in learning of equal importance with the ' law of use,' that is, of frequency, mentioned above.[1] But as the neurological formulations of this law of effect proposed by him and by others have not been entirely plausible, a diversity of views among the students has persisted. Hobhouse and S. J. Holmes have proposed instead a theory of ' congruity of response,' which calls attention to the relations of individual reflexes to each other within the larger response, in order to account for such instances as a chick's avoiding a certain variety of caterpillar after experiencing its bitter taste.[2] Watson shies at the idea of states of consciousness acting upon reflexes, and he renews the attempt to explain learning wholly on the principles of contiguity and frequency, disregarding pleasure and pain altogether.[3] There are, of course, many variations of these positions among the authorities.

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[1] The Integrative Action of the Nervous System, 1906.

[2] *Op. cit.*, p. 66.

[3] *Op. cit.*, Ch. V.

We have already noticed that Hobhouse's principle is important in learning (it is similar to the point made by Peterson in the note above, p. 153), but it throws no light on the influence of affection on habit-formation. As Thorndike retorts, a cat can be taught to scratch herself in order to get the cage opened, just as easily as she can be taught to press the lever, though in the first case there is no congruity between the two results. And Watson himself gives us data showing that learning is accomplished faster when both reward and punishment are used than when either one is employed alone (p. 200).

Conditioned Reflex and Pleasure-Pain

The whole matter becomes clearer when we adopt the view that pleasantness and unpleasantness are always the conscious correlates of instinctive seeking and avoiding reactions, and apply the principle of the conditioned reflex or of contiguity. It is curious indeed, how slow the behaviorists have been to work this application into the formulation of learning. Woodworth has at last made it in one passage, where he describes the learning of a mouse under punishment (Yerkes' experiments). The mouse can escape from its cage through either one of two passages, one passage always being marked with a white arch and the other with a black arch, these marks being frequently interchanged. When the mouse chooses the white-arched passage, he gets an electric shock, and by a number of trials he learns to steer clear of the white arch wherever it may be. Woodworth explains:

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[1] See his Original Nature of Man, Chs. IX, XII.

[2] Holmes, article cited, and studies in Animal Behavior (1916) Ch. III.

[3] Behavior, Ch. VII.

> The avoidance of the pain-giving passage can be understood as a case of conditioned reflex; the sight of the passage is quickly followed by the shock, which calls out the avoiding reaction, and thus the sight of the passage comes itself to evoke the avoiding reaction, while the exploring reaction, incompatible with the avoiding reaction, is shunted out.[1]

There is the whole case in a nutshell, yet Woodworth, in his more exact chapter on the learning process, refers vaguely to the 'law of effect,' without in the least indicating how that law operates (p. 117). The stock examples, Hobhouse's chick and caterpillar, Meynert's child and candle, are identical in principle. All students agree that there must be native reactions which cause the chick to spit out the caterpillar in the first experience, or the child to retract its hand from the flame; and the possibility of attaching native reflexes to originally indifferent stimuli is well-known through the experiments on the conditioned reflex. Pavlov's experiments indicate how the 'pleasure' of eating 'stamps in' the act which has at last attained the food. When the dog gets a stimulus which has been experienced in contiguity with food a few times, his saliva starts flowing and he is already 'in imagination' eating the food. This phenomenon means that the complex of instinctive food-seeking and eating mechanisms comes to be set in action by the originally indifferent object, and these mechanisms, like those of the emotional and affective reactions in general, lend a special vigor to the animal's total response. It may be that the vigor of the ' consummatory ' reaction helps to establish the successful preceding act more quickly than on ordinary frequency principles. At any rate, we see that eating-reactions or other pleasant (that is, sought-for) results may be associated with the visual stimulus of a black-arched alley, or of a lever in a cage, etc., and avoiding or unpleasant reactions can be transferred to such stimuli as the sight of bad-tasting caterpillars or of flames, all on the ordinary principles of the conditioned reflex, and the puzzles of pleasure and pain as motives are in a fair way of being solved.

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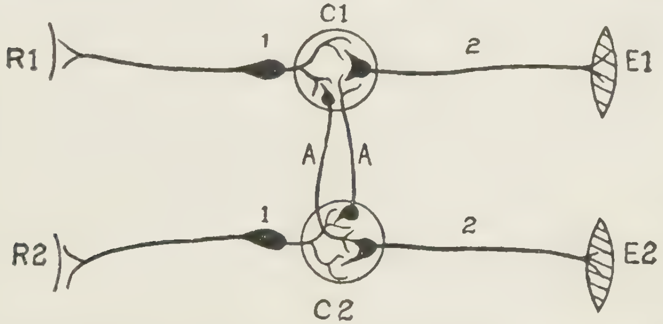
[1] *Op. cit.*, p. 88.

Herrick gives an anecdote to illustrate the method whereby new nerve-paths are formed, which brings out the point concretely:

> A collie dog which I once owned acquired the habit of rounding up my neighbor's sheep at very unseasonable times. The sight of the flock in the pasture (stimulus R–1) led to the pleasurable reaction (E–1) of chasing the sheep up to the barnyard. It became necessary to break up the habit at once or lose a valuable dog at the hands of an angry farmer with a shotgun. Accordingly, I walked out to the pasture with the dog. She at once brought in the sheep of her own accord and then ran up to me with every expression of canine pride and self-satisfaction, whereupon I immediately gave her a severe whipping (stimulus R–2). This called forth the reaction (E–2) of running home and hiding in her kennel. The next day (the dog and I having meanwhile with mutual forgiveness again arrived at friendly relations) we took a walk in a different direction, in the course of which we unexpectedly met another flock of sheep. At sight of these the dog immediately, with no word from me, put her tail between her legs, ran home as fast as possible, and hid in her kennel. Here the stimulus R–1 led not to its own accustomed response, E–1, but to E–2, evidently under the influence of vestigial traces of the previous day's experience, wherein the activities of C–1 and C–2 were related through the associational tract (A,A) passing between them.[1]



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[1] *Op. cit.*, p. 68.

TRANSFER OF EMOTIONAL REACTION — 'ACQUIRED INTERESTS'

There is abundant evidence also that emotional reactions are constantly being transferred from their original objects to new stimuli, on conditioned reflex or association principles; and this circumstance indicates that we are correct in assuming emotion and feeling to be underlain by similar mechanisms.

Daily life is full of examples. Who has not felt an unreasoning like or dislike toward some person with whom he had no acquaintance? If the matter were sifted down it would be found that some association accounted for it, — the unknown individual perhaps resembled another whom the subject had good cause to dislike. Who has not felt a thrill of joy or sadness at the sight of some insignificant object which had belonged to a dear one, — a little pair of shoes, a ring, a photograph? People whose experience with telegrams has been chiefly in connection with family deaths experience the symptoms of fear whenever a telegram of any sort arrives. A faint odor, a snatch of tune, will often reflexly arouse a slight vague emotional feeling which we are at loss to account for until suddenly we remember the associating links. Fear of the dark, as we know, is more than half traceable to foolish tales heard in childhood.

The 'power of association' is commonly taken for granted, like the power of pleasure or pain; but we are concerned to emphasize that these transfers of emotional feeling are not merely association of ideas, but are acquired links between stimuli and responses. As some of our examples have shown, the ideas or conscious correlates are frequently so abridged that they give us no clue to the original bonds of association; but when we realize that the neural processes form the more complete and constantly active system, we can detect the machinery of association at work even when it has become partly unconscious.

It is only by means of this transfer of affective reactions that we acquire 'interest' in the greater part of that variety of objects which make up our world. Originally our reactions are adjusted to but few stimuli. Supposing that the primary emotions are fear, rage, love, elation, subjection, and possibly grief and mirth, the fear responses in the human infant are only to the situations of falling, sudden noises, and shakes. The rage reactions are only to physical hamperings of its movements;[1] elation and subjection are chiefly elicited by smiles and frowns, etc. If we allow for the maturing of instinctive apparatus in the course of bodily development, we shall have to enlarge this list somewhat, but it will remain small compared with the adult human being's actual range of emotional stimuli. Then there are apparently a larger group of stimuli which instinctively bring the minor affective reactions (pleasantness and unpleasantness), but this group also is small by comparison with the range of our actual sophisticated likes and dislikes.

Throughout life we keep acquiring new inlets to these responses, as the adequate stimuli are experienced in close conjunction with new stimuli (which may have no causal relation with the first at all). The infant in a few months experiences a pleasant complex of affective feeling at the sight of his mother, and this is frequently followed quickly by a burst of rage if the ' anticipated ' food is not forthcoming. The pleasant complex is composed of associations with the adequate stimuli of food, soothing motions, pressure and smiles, let us say. In the same way the rage response can be attached to the sight of a disagreeable person who has tormented the infant on several occasions; and moreover this rage response can be transferred again to anyone who looks somewhat like that disagreeable person. A striking point in Watson and Morgan's experiments is that infants do not originally fear flashes of bright light. They do fear sudden loud noises, and the authors conclude that the fearful feeling experienced by most adults at flashes of lightning is a conditioned reflex established by the thunder which usually follows.

We can now give a little more exactness to McDougall's contention that the instinct's ' central core ' of emotion remains unchanged throughout the alterations of original responses by habits which adjust the subject to his special environment. Our inner reactions, including glandular secretions, heart action, and so on (which seem to give much of the emotional consciousness), do naturally remain intact as the group is transferred from the original situation and response to other situations and other responses. There is no way of breaking them up. The stimuli inciting us to rage, for example, and our responses thereto, change progressively as we grow older. But when we are aroused, by satire against ourselves, to satire-reactions of speech or writing, our total response still contains the inner changes of rage, which are preparing our body for driving its fists and teeth home, and for repairing the wounds inflicted by its opponent. These hereditary precautions, incidentally, interfere somewhat with our effectiveness in the satire-combat, for they ' muddle ' our thinking.

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[1] Watson and Morgan, *loc. cit.*

But McDougall does not limit the instinct of pugnacity to these inner reactions which remain intact; to him the whole process of perception, feeling and expression is the instinct; the emotional consciousness is unique and unanalyzable and not accounted for by inner sensations; and this conscious core operates on the outer world with some discretion, partially by habits acquired through the old laws of association of ideas and by the magical efficacy of pain and pleasure. On all these points, as will be gathered from the previous discussion, we believe he has fallen into the error of pseudo-simplicity, though in the most general way his account is a true one.

FOREGOING ILLUMINATES SHAND'S DOCTRINE OF ' SENTIMENT ' AND FREUDIAN ' ÜBERTRAGUNG '

There is another doctrine which McDougall has popularized, to which this scheme of the transfer of emotional reactions supplies more definiteness and accuracy,— that is Shand's conception of the ' sentiment.[1] Sentiment is the technical term given by these authors to a system of primary instincts and emotions organized by experience around a single object. It is clear, as they point out, that some of the instincts of practically any person come to be aroused in behalf of some other person or of some thing, in much the same manner that they were originally aroused in behalf of the agent's own body. Love is a common sentiment, as distinguished from the original passion or emotion. A mother, for instance, by her experiences with her child and thoughts of it before its birth, comes not only to display instinctive parental behavior toward it but also to experience fear when the child is in danger, anger when it is threatened or disparaged, elation when it is praised, and so on. A man may also acquire a sentiment of love for another man, or for such an object as a dog; and we are well aware that the sentiment of hate is possible. In the latter case the hater's instincts are aroused inversely with reference to the situation of the object,— he is elated when the hated object is despised, angry when it prospers, disgusted and angry in its presence, etc.

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[1] McDougall, *op. cit.*, Ch. V; A. F. Shand, Foundations of Character.

Ideal sentiments are of the same nature, so that for the sake of justice or religion or patriotism men have feared and exulted and died. The original, naïvely egoistic instincts may thus be organized by means of habits to dispose the agent's energy in any altruistic cause within the limits of educability. McDougall traces at length the development of the "self-regarding sentiment," which refers to the organization of instincts with regard to the agent's own body and social environment.

James had already made much the same point in his discussion of the various selves.

> Our immediate family is a part of ourselves. . . . When they die a part of our very selves is gone. If they do anything wrong, it is our shame. If they are insulted, our anger flashes forth as readily as if we stood in their place.[1]

Our home, our work, are the subjects of similar instinctive reactions on our part, he says.

The Freudian school has given attention to a different kind of 'sentiment' than these British psychologists discuss,— namely, the abnormal cases which are prominent in insanity. Displaced 'affects,' usually of a sexual nature, play a leading rôle in the Freudian discussions, especially in Freud's earlier and formative period of the Studies in Hysteria. The hysterical person suffers anesthesia, hallucinatory pains or other symptoms, the origin of which is quite unknown to him. The psychoanalyst, by attention to the patient's personal history, dreams, and free associations, discovers that the trouble originated through association with some unfortunate love affair, perhaps connected with a tragedy of illness and death. We can better consider the Freudian system as a whole, and the general problem of 'sentiment-building' after we have discussed the reasoning process and the development of personality; but it is to be remarked here that a great deal of the Freudian data on what they call Übertragung or transfer of affect, is translatable into physiological psychology in terms of conditioned emotional reflexes,[1] and is therefore of much potential value in determining the limits of human emotional educability. For this matter of limits — to what extent can desirable and reliable 'sentiments' be manufactured by social control? — is the outstanding problem suggested by the doctrine of the sentiment. We shall see what generalities can as yet be hazarded on the subject when we have finished our survey of the motive-building process.

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[1] Briefer Course, p. 178.

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[1] Dr. F. L. Wells, in a note, "Von Bechterew and Übertragung," Jour. Phil., Psy. and Sci. Methods, 13: 354–356 (1916) points out that Bechterew's hints bring the Freudian "transference" and the physiologist's "conditioned reflex" together. Watson develops the point in "Behavior and the Concept Mental Disease," *Ibid.*, pp. 589–597.

CHAPTER XII

LEARNING, REASONING AND RATIONALITY

Learning Process Believed to Explain Reasoning

By our account of the original behavior-apparatus and of the methods by which additional apparatus is acquired (learning), we have to a considerable extent described the nature of *intelligence.* Intelligence means ability to adapt oneself to unfamiliar circumstances, that is, to achieve his purposes in situations for which he possesses no completely fashioned instinctive or habitual response-mechanisms. We have seen in what combinations of simple processes this ‘ ability ’ consists in its lower stages.

But doubtless it seems to the reader that we have left out just the essence of human intelligence, or at least of human rationality. Between the cat solving the puzzle-box, it will be said, and the statesman guiding a nation, there is an unexplained gap. If we answer that the difference is in the original instincts and organs, especially in the relative brain masses which limit the possible range of learning — that is, in the extent of possible habit-formation — we shall very likely be told that over and above this difference, the phenomena of thought make a fundamental distinction. Men do not respond merely to immediate stimuli; their behavior is largely governed by ideas, many of which represent future, remote, and non-existent objects. It is characteristic of the human being that he solves his problems in thought. Some strong interest takes possession of him, an interest which as like as not bears no discernible relation to his instincts or to pain or pleasure, and this interest determines the general direction of his thoughts for days or hours. It selects and rejects ideas according to the man's vague knowledge that they are or are not taking him toward his goal. When his thoughts wander, this warm interest brings him back to relevant considerations. Finally he has reasoned out the solution which permits him to succeed in some new and untried practical enterprise. A man who is put in a puzzle-box will not paw around at random until accidentally he operates the lever; he will sit down and appraise the situation and presently infer that the lever is the most promising point of attack.

In spite of the plausibility of this line of argument, there are good reasons to believe that it is based on illusory appearances, and that ' trial and error ' learning and reasoning differ not in nature but only in the instinctive and habitual reactions involved, more especially in the complexity of the association tracts. ' Complexity ' here means nothing more than the number of neuron connections involved within the central nervous system, chiefly in the cerebral cortex.

Trial and Error in Imagination

Let us first consider the differences which ideas, imagination or thought make. Suppose that all thought is, as the hypothesis we have mentioned assumes, a series of imaginal revival of sensations (with some admixture of actual sensations), and that any sensation or its image is always correlated with the activity of a certain reflex circuit or combination of circuits. In addition to the many other grounds which commend some hypothesis of this general nature to a number of modern psychologists, we have seen that support is afforded it by the parallelism between muscular habit and association of ideas. We know that when two responses have occurred closely together in time on several occasions, the recurrence of one brings about some activity in the other. How much activity is thus aroused in the second depends on a number of circumstances, including the strength of the association and the other contemporaneous activities of the body. Under conditions such as Pavlov provided for his dogs, the second response was active on the overt level, it was a conditioned reflex which could be easily observed by the onlooker from the gross behavior of the dog.

But in our own life we know that the recurrence of the first of the associated responses often arouses the second only as an *idea*, not to the extent of overt behavior. James' absent-minded man may only *think* of getting out his key when the response of perceiving a doorstep occurs. We step out of doors and discover that it is raining. If we have our umbrella, up it goes from force of habit. But if we have neglected to provide one, we only think of having one, we imagine its appearance and probably the feel of raising it. According to the above general kind of hypothesis, many of the same reflexes are operative in either the overt or the ideal response, the difference being in the degree of activity or muscular tension. Similarly with all other imaginal or thought processes: they are believed to depend on associations with some context of actual sensations or responses, though by short-cutting from one idea to another without reviving all the intervening experiences, the course of imagination makes combinations of images which do not as a whole correspond to any reality.

Returning now to the cat in the cage; has she any ideas? The psychologists dispute about that question, but all agree that she forms conditioned reflexes (learns habits), the like of which, as we have seen, probably underlie all our own ideas. So that when Pavlov's dog secretes saliva at the sight of food, or of the red light associated with food, and makes other responses characteristic of eating, we may suppose without making ourselves utterly irresponsible that he ' imagines ' himself tasting the food, and imagines it so strongly that some of his reflexes have become fully active. His experiences may well be comparable to ours in similar circumstances. In any educable animal, a stimulus which has been experienced several times in connection with food, sex gratification, liberation from confinement, etc., will ' catch the animal's attention ' when his physiological state is suitable, because the responses of attention to it and of satisfying the appetite become active together and reinforce one another.

In similar fashion the animal ' remembers ' unpleasant effects connected with a given stimulus. We have seen that he learns to avoid the most conventional signs connected by contiguity with punishment (e. g., the mouse and the white-arched passage), presumably because the instinctive avoiding reaction is aroused by the attention response. But when the mouse avoids the white-arched passage after learning the trick, or when the chick steers clear of the nasty caterpillar, we do not see them going overtly through *all* the original responses of pain. Rather, we may assume, the aversion is chiefly in ' idea '; the mouse ' feels disgust at the sight of ' that gate; somewhat as we do at thistles or other things which have borne witness to our unpleasant experiences.

There are other lines of evidence which have convinced many students of animal behavior that some lower animals have ideas, in the more complex sense of carrying out a chain of responses in imaginal terms. Dogs, for instance, seem to be disturbed by bad dreams; and they are said sometimes to make gestures to draw their masters' attention to some situation they have discovered, and so on. Yerkes recently found that a young orang-utan, after a number of trials on the problem of choosing the first door to the left out of a varying number of open doors, suddenly mastered the trick. Because of the similarity of this learning curve to the curves of human subjects on rational problems, Yerkes believes it indicates ' ideation ' in the orang-utan.[1]

In our opinion, it is not necessary to attribute complex ideal solutions to the lower animals in order to assume that they have ' ideas,' because one imaginal step like the (incipient) shrinking from an object of painful experience contains the germ of thought. If we had an accumulation of cases in which lower animals had, under careful observation, solved problems of several stages without having recourse to the expected series of overt experiments, we should say that unquestionably the trial and error had been accomplished in imagination.

Now what has all this to do with human rationality? The answer is to be found in the concluding sentence above: reasoning is just ' trial and error accomplished in the imagination.' And not altogether in imagination either, for the crucial step in all reasoning is proving its validity by some operation on the environment, by some objective test or trial, which may prove the solution to be an ' error.' We do not press the point of animal consciousness, for we must remember that there are numerous unconscious habits operating constantly in human beings. We do not press the point that the physiological basis of all thought is probably the reflexes correlated with images. But we develop the matter through these stages of speculation in order to join hands with the psychologists of reasoning, who on introspective and gross behavior evidence, are coming more and more to consider reasoning as having the same fundamental character as the learning of any motor trick, whether by lower animal or by human being.[1]

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[1] R. M. Yerkes, The Mental Life of Monkeys and Apes: A Study of Ideational Behavior (Behavior Monograph No. 12), 1916, p. 68.

But the difference in detail and in common-sense apprehension is so great that we must attempt to analyze the mechanisms of reasoning, in order that this alleged identity between the two may become at all plausible. In the present state of knowledge we cannot demonstrate the identity very completely, yet we believe a high degree of probability can be established.

PSYCHOLOGICAL PROCESS OF REASONING DISTINGUISHED FROM LOGICAL STATEMENT

First we must make the distinction, now frequently pointed out, between the psychological *process* of reasoning and the formal *statement* of a chain of reasoning after the problem has been solved.

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[1] For instance Woodworth: "In general, then, the process gone through in original activity has the form of varied reaction and trial and error, with some degree of control and generalization. The process may be restated thus: The individual is confronted by a situation to which he attempts to react but meets with obstruction. This stimulates him to exploration and varied attempts at escape. The situation, being complex, offers many points of attack, many features which, being observed, suggest or evoke reactions in accordance with past experience. The difficulty is, to find the right feature to react to, or, in other words, so to perceive the situation as to be able to bring our existing equipment into successful use" (*Op. cit.*, p. 143). And Thorndike: "Thinking and reasoning do not seem to be in any useful sense opposites of automatism, custom, or habit, but simply the action of habits in cases where the elements of the situation (problem) compete and coöperate notably." — "The Psychology of Thinking in the Cases of Reading," Psy. Rev., 24: 233 (1917). And Joseph Peterson: "Rational learning does not seem to differ from the usual trial and error learning in any important manner except in the explicitness with which the various elements in the situation are reacted to and retained for subsequent use." — "Experiments in Rational Learning," Psy. Rev., 24: 466 (1918). The treatments of reasoning by James and Titchener lean strongly in this direction, and Pillsbury and Dewey, in the reference cited below, emphasize the complete dependence of the process of reasoning on the laws of association of ideas, which, as we have seen, are simply the laws of habit.

The process of reasoning is not a matter of syllogisms, but of successive guesses at the solution, which guesses are dictated by the strongest associations with the special aspect of the problem which, for the moment, receives attention or is responded to. The principles of logic, however, the present writer believes to be very closely related to the physiological processes of behavior, in the manner pointed out by the old associationists, so that we do not consider the above distinction to be a sharp one. The cat's responses to a group of stimuli which are common to all dogs, for instance, amounts to an ability in the cat to classify other animals as dogs or not-dogs. The lower creatures' logic, as well as our own, often leads them into serious practical dangers, and, as James pointed out, our finer discrimination or nicer adaptation of responses to varying situations has given us mastery over the other animals, — has given us power, in short, to deceive them. The mouse learns a response to the object cheese, but often does not learn in time to discriminate the varying contexts of cheese so as to avoid traps. The process of induction corresponds closely to the learning of responses in separate cases; deduction is a matter of hitting on the essential aspect or label of a new case so as to use an old trick that is adequate. Mice and rats soon learn to grasp the essential aspect of many varieties of trap, and so to give the adequate response of avoidance to them all.

But whatever the relation of principles of logic to principles of psychology, it is clear enough from anyone's experience that our efforts to solve a rational problem do not occur in the order that our demonstration of proof follows after we have hit on the solution. What we do is try out successively our established reactions until the stimulation which keeps us trying is stopped by a successful combination of reactions.

Elements of Reasoning Process: Ambiguity

To reason, we repeat, is essentially to use an old trick or a combination of old ones, to meet a new difficulty. A boy on the farm, let us say, sees a rabbit scamper into a brushpile. The lad has never dealt with the particular situation before, but he has killed rabbits and his hunting proclivities (composed of instinctive and habitual elements) are aroused. He brings to bear the various methods of attack which different details of the strange situation suggest, either overtly in action, or in imaginal terms, that is, in thought. He whistles for his dog, looks for a stone or club, considers burning the brushpile or merely beating it, and even thinks of trusting that the rabbit will stay there while he goes for a more effective weapon.

The strangeness and complexity of the situation, in each case, illustrates Dewey's statement that the provocation to reasoning is always an ambiguity, like a fork in an unfamiliar road. There is no predominant response which is immediately called out, but there are several responses which tend to be weakly aroused because of the ambiguity. As soon as the agent begins to attend to specific features of the matter, his established responses are unequivocally aroused and are tried out successively, either actually or ideally; but to the situation as it first presents itself, the total attitude is one of inhibition and bewilderment because there is no ready-made method of dealing with it.

A purely intellectual problem presents the same kind of ambiguity. A 'problem' such as: Find the square root of 2, involves not reasoning but only habits, unless the student is not thoroughly familiar with the necessary procedure. If he is not sure how to carry it through, it means just that the situation is ambiguous, several lines of action seeming to have about equal chances of success.

Besides this character of ambiguity, there are three other elements in the reasoning process which are stressed by the authorities, namely, (2) the suggestion of one proposed solution after another, (3) the testing of each solution-candidate until one proves successful, and (4) the purpose or drive which keeps the agent trying. The last-named element is first in time and importance, but we prefer to treat of it last. Assuming for the moment, then, a dominant purpose which incites the reasoner to continual action, which limits the range of his guesses and finally is set at rest by a certain kind of success, let us consider the other two elements further.

Suggestion of Tentative Solution by Association

The next step in the process is the trying out of a solution which has 'suggested itself' by virtue of the associations connected with a particular aspect of the problem. We have seen that the animal in the puzzle-box shifts attention from one part of the box to another, and gives the reactions which are most firmly connected with these various stimuli. In mental reasoning also, we shift attention from one part of the problem to another, and use the associations which are called up by each feature. If we are presented with a mechanical puzzle, we notice first one notch or partial shape, then another, and follow up the suggestions which these different earmarks severally and jointly arouse by virtue of our past experiences. That is, we act out a habitual response, either with our fingers or in imagination, first to one and then to another stimulus.

These tentative solutions or suggestions constitute the crux of the whole rational process. They are the variations from which the conditions of external nature select the right response, if the right one is ever suggested at all. It is worth while, therefore, to emphasize the complete determination of such suggestions by the laws of association or of habit-formation. Pillsbury says,

> If one will but follow through a chain of reasoning, it will be observed that the elements are connected by the same laws of association that are operative in the simplest recall.[1] Dewey concurs: Given the facts A B C D on one side and certain individual habits on the other, suggestion occurs automatically.[2]

The reasoning of a woodsman and of a city dweller on the situation of being lost in the woods will differ, therefore, chiefly on account of the differences in their established habits. The conjecturing, from a track in the snow, of an animal of certain appearance, as Pillsbury points out, will be a mere perception for the guide, whereas to the city man it will be a process of inference. The difference is clearly due to their varying habits; the former has learned the exact response to the stimulus of that-shaped footprint, but the latter must learn it by a kind of trial and error.

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[1] W. B. Pillsbury, The Psychology of Reasoning (1910), p. 3.

[2] J. Dewey, How We Think (1910), p. 85.

Between mere perceptions and complex chains of reasoning, there are the gradations of judgments, appreciations, and inferences, as the same author shows. ‘ Unconscious inferences,’ which Mr. Wallas and others have demonstrated to be so important in social life, are either habitual responses, containing several links which operate without giving explicit consciousness, or are single conditioned reflexes into which the inference is read by the observer. The guide, that is to say, may have seen the footprint previously only when the animal was also on hand to be compared with it, so that there is no inference about his recognition, only an association. Similarly, if people buy Jones' soap rather than Smith's because Jones is the heavier advertiser, it is not necessary to assume much inference at the bottom of the process. The advertisements associate a fringe of pleasant feeling about the concept of Jones' soap, and this vague fringe is enough to determine the customer's preference, unless there are stronger counter-attractions, such as associations of poor quality and high price with the soap of this same Jones. It is idle to dispose of the old associationist philosophers, therefore, by making out of them men of straw who believe every human action to be based on conscious reasonings, going carefully through all the implicit steps. Such, however, is one of the favorite methods of the anti-intellectualists.

There do, indeed, seem to be innate differences in reasoning ability, not determined by mere range of pertinent associations. James spoke of *sagacity*, in addition to learning, as requisite for good reasoning. We can hardly guess what the physiological differences are which make one mind a single-track affair, slow and uncertain in shifting attention from one feature of the problem, or from trying a wrong method, to other more promising aspects, while another mind is fertile in suggestions because it does explore thoroughly the whole situation. General reasoning power is to be cultivated to some extent, says Dewey, by acquisition of the habit of carefully diagnosing any new problem before following out a particular clue. Such a careful examination will lead both to a larger variety of automatically presented suggestions, and to a quicker trying out of the suggestions after the diagnosis is finished.

TESTING OF PROPOSED SOLUTIONS

This third element, the testing of proposed solutions and selection of the right one, must now engage our attention. Some such process must occur for every guess, though we may not be conscious that these separate steps do exist. What constitutes the success or failure of a tentative solution is clear enough in its larger aspect; it brings or does not bring realization of the purpose behind the reasoning, by a suitable physical operation on the environment. Success to the cat is getting the food and stopping its hunger; failure is completing the ' suggested ' response without stopping the hunger. Our own reasoning is often tested in this way; we see that the puzzle is or is not put into the desired form, or we do or do not reach our destination. But the test with which we stop satisfied (temporarily), in many chains of reasoning is not a practical one. It is merely compatibility of the new solution with several other accepted principles.

The psychologists of reasoning dismiss this case with the phrase "or the solution is believed to be adequate for practical success."[1] We shall try, however, to show its relation to the more simple cases.

This wholly introspective test of a suggestion's adequacy, means that the ' implications ' of the tentative guess have been ' mentally ' explored, and the harmony or disharmony of these consequences with the implications of other accepted principles is recognized. A man suspects the fidelity of his watch, for example, and wonders if it has stopped an hour or so and then started again. If no reliable timepiece is available, he has recourse to testing the implications of the time denoted by the watch with the implications of other signs, such as the sun's position, the state of his appetite, the sounds in the distance and so on. He may be convinced thereby that his watch is correct, but the objective test comes later when he does or does not make his appointments on time. In mathematics the process of proof is wholly a matter of comparing implications.

In such a logical demonstration, the implications or consequences which follow from certain propositions are by many logicians believed to proceed from an impersonal, ultra-mundane necessity, while the consequences from more practical propositions, such as of the time of day, are supposed to be due to natural law of the world as it happens to exist. But there is still a good case to be made for Hume's doctrine that our acquaintance with, and belief in, these logical uniformities, these ' eternal verities,' is the result merely of invariable practical associations. The chicken whose master feeds him day after day, as Bertrand Russell says,[1] comes soon to ' believe ' that the process will go on forever, though the time comes when the master wrings the bird's neck. It is clear, says Russell, that more refined views on the uniformity of nature would have been useful to the chicken.

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[1] See Pillsbury, *op. cit.*, p. 10.

Our own beliefs in logical necessity and natural laws appear to differ from such a belief as this, first in being borne out by a greater number of instances without contradiction, and also in being supported by a larger number of congruous associations. Our facilities for accumulating instances beyond the range of our immediate bodily stimuli makes our greater assurance possible. Many logical propositions, to be sure, such as those concerning irrational numbers, have no meaning in existential terms, but still these propositions may be wholly composed of propositions derived from our race's actual bodily experience. The question, of course, is a large metaphysical one.

Our concern here is simply to suggest that the process of proving out tentative suggestions in the more subtle cases of reasoning, where the test is only congruity with other established principles and their implications, may plausibly be reduced to an acting out, at the low tension of imagination, of our previously established responses, on principles identical with those of the simplest learning. Some instinctive elements doubtless remain in all these established responses, but for the most part they have been learned, they are habitual. So the reasoner acts out imaginatively his new supposition according to the associations it automatically produces, and if the ' solution ' is incorrect, presently he will be stopped by the innervation of contradictory responses. His first guess, let us say, leads him through successive consequences finally to the proposition that there are 400 degrees in a circle. Here his progress is thwarted by the more strongly established response that there are 360 degrees in a circle. The proposition asserted by the unreliable watch that the shadows point north at 10 o'clock is quenched by the better established response (belief) that the shadows point north at noon. Thus all cases of unsuccessful trials in reasoning may, perhaps, reduce to the type of baffled physical movement (and our feelings in such instances often do indicate this correspondence), due to the incompatibility of our suggestion with the facts of the environment.

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[1] The Problems of Philosophy.

This formulation of the behavior-basis of abstract thought is certainly bald and premature, and is doubtless unconvincing. Our information concerning the mechanisms of the process is still slight. There are, however, several commonly recognized facts of experience which lend support to the above account.

The great rôle played by language must always be borne in mind. Words are short cuts through action and through perception. As we have seen, language is a system of habits, or of compounded conditioned reflexes. Words are always learned by being heard or seen in close temporal contiguity with their 'meaning,' which is a setting of other experiences of the learner's body. After a small capital of words is acquired, other words are built upon them as meaning, and so the process goes on indefinitely to higher and higher abstractions. In connection with every word of our own vocabulary, however, there are vague sensations — visual, auditory, kinesthetic — which come into consciousness with it and make up part of its meaning, and the peculiar pattern of this sensation-complex is due to our special experiences with that word.[1] But though there is something of idiosyncrasy in the meaning of any word to each one of us, the essential feature of words is that they identify situations which are experienced in common by all people. The sound "Fire!" will therefore start a panic in a theatre nearly as effectively as the sight of actual flame and smoke; or if a man says, "There was a fire in a theatre," or "I was in a train wreck," he conveys to us a complex of images which it would take him hours to act out in pantomime or sketches.

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[1] Cf. Titchener, Experimental Psychology of the Thought Process.

Words are shorthand both for stimuli — objects, qualities, relations — which have been analyzed out of the rough mass of the environment by our ancestors, and also for the innumerable responses to those stimuli which our race has gradually learned. It is largely to these ready-made discriminations from the crude situations we meet, of the essential features, and to the ready-made responses which have been learned painfully before our time, that we owe our superiority to the brutes. Of course, our absorption of this ready-made equipment, as well as the original inventions of details in it, were possible only because of the large association-tracts in our brains and other physical peculiarities.[1] So habitual is the use of words to us that our thoughts are usually predominantly composed of images of uttering or hearing speech (kinesthetic-auditory imagery).

Now human reasoning is carried on largely by means of words; and because of their condensation of experience, they save us much time and effort. With a certain accumulation of concepts, for example, men can divide land approximately equally by counting the furrows made in plowing it, but with a larger stock of concepts they can divide it accurately by means of a few measurements and calculations. So that the trains of language which the abstract reasoner rattles off at the low tension of imagination are really verbal habits, which habits are constantly pruned and checked by their adequacy in leading to action and perception.

The next fact which lends support to the conclusion that abstract reasoning is a matter of habits is that in vast numbers of cases a solution reached and apparently proved in thought is found inadequate when it is applied to operations on the outer world. If the problem is even moderately complex, few of us can carry all its elements completely through the reasoning ' in our mind.' There is a simple experiment, for example (used by Holt in his classes), in which one end of a band of paper is turned one hundred and eighty degrees and then the two ends are pieced together, leaving that half-twist in the circular band. The observers then predict what paper figures will result from cutting lengthwise completely through this band. Few observers can carry all phases of the matter through their calculations so as to predict that there will still be but one band with a complete twist in it, not two bands. Similarly Pillsbury mentions a skilled maker of scientific instruments who finds that he can hardly ever carry out his paper plans completely in actual constructions, some obstacle has always been overlooked. The superiority of this final objective test by immutable natural conditions, over mere subjective confidence in our 'knowledge,' is the half-truth back of the good old distinction between theory and practice.

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[1] There is an illuminating article along these lines by the physiologist Ralph S. Lillie, "What is Purposive and Intelligent Behavior from the Physiological Point of View?" Jour. Phil. Psy., etc., 12: 589–610 (1915).

This point that subjective conviction of the validity of one's reasoning is not a final proof, is elaborated by the Freudians under the captions 'logic-tight compartments of the mind,' and 'rationalization.' Everyone, they think, maintains full belief in each of several contradictory principles, without realizing the contradiction; and in some varieties of insanity this blindness is absurdly exaggerated. The patient who believes herself a queen still cheerfully scrubs the floors, not perceiving the discrepancy between the two propositions.[1]

If such a discrepancy is dimly realized, as by a man who is mean in business while professing himself a Christian, 'rationalization' is frequently resorted to. This man tells himself that charity begins at home, or that other people are well qualified to look out for their own interests, and so on. That "The wish is father to the thought" in multitudinous instances has been patent to wise men of all times. The tendency extends from the child whose predilection for 'make-believe' seems due to actual difficulty in distinguishing the imaginary from the real, down to the most cold-blooded and logical scientist, who is occasionally unable to notice facts which contradict a favorite theory. Darwin remarked that it is well for anyone to write down immediately any such contradictory facts which he does observe, since otherwise they are likely to be forgotten.

We shall consider in a moment whether the mysterious apparatus of the 'subconscious' is necessary to account for these psychological phenomena; but at any rate the general fact seems clear that introspective certainty is not as conclusive a proof of correct reasoning as is successful operation on the environment, which favors the hypothesis that abstract or wholly mental reasoning is just trial and error (of habits) carried on at the low tension of imagination, with the result that proposed solutions are tested only by their compatibility or conflict with our more firmly-established habits. Our *real knowledge* is a system of habits which at any time can be successfully used in practice, such as the assertion that two and two make four.

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[1] B. Hart, The Psychology of Insanity, pp. 81, 82 (1916).

The Purpose, Interest or Drive, which Keeps Subject Trying

It remains to investigate the one remaining element of the reasoning situation, the element which appears first in point of time, the purpose or interest or drive, which keeps the subject trying and determines what will be the right solution. It is not difficult to describe this element in introspective terms, and this is as far as the theorists of reasoning usually get. A purpose arises in consciousness, which may be anything from finding a postage stamp to working out the problems of the Peace Conference, and the ' attraction ' of this interest keeps our thoughts upon matters which are relevant to it until a solution is found. Such was Hobbes' account of the process of definitely directed thought, as contrasted with idle reverie, and modern psychology has not greatly improved on it. The writings on definitely directed thought and purposiveness denote this directive entity as *Aufgabe* (the term of the German writers Ach and Watt), ' determining tendencies,' ' cortical set ' and many other terms such as apperception and attention.[1] Whatever the entity is, it determines that certain ' relevant ' associations will be called up rather than others which are equally attached to the cue which receives attention. Show a student two numerals arranged thus: $\begin{array}{c}6\\ \underline{4}\end{array}$, and according as you say "Add," or "Multiply," or "Subtract," different trains of associations will be started in the student's mind by these black marks.

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[1] See references in Titchener, Experimental Psychology of the Thought Process; also Pillsbury, *op. cit.*, p. 12.

Titchener is emphatically of the opinion that this ' determining tendency ' or ' cortical set ' is a complex of physiological processes, the resultant of the agent's personal history, some of the processes operating unconsciously, presumably according to the ordinary ' law of decay ' of consciousness which characterizes all habit. He believes, as everyone not an interactionist must, that there are definite neural mechanisms back of all these purposes, impulses to action, and progressive trends of thought, but like other authorities he does not undertake to exhibit these mechanisms specifically. We shall attempt, however, to point out how this factor also may be interpreted in terms of instinct- and habit-mechanisms, thus reducing them as nearly as we can to the common denominator of the nervous system. So long as we confess ourselves able to give only an introspective report of the ' selective agency ' in reasoning, a redoubtable stronghold is left to the mystics.

We have used the word ' purpose ' indifferently for the determining tendencies in progressive thought, in reasoning, and in purposive behavior. The students of these varieties of the subject are making it clear that the *Aufgabe* in thought, and the purpose in any teleological action, present exactly the same characteristics.[1] The ' set,' whether for the solution of a mental problem or for such a practical task as the finding of a stamp, brings up suggestions which are more relevant to the problem than others would be which are equally associated with the situation, and it determines what will be a solution.

Some of these authorities are citing the ' keep trying ' of the hungry animal as a typical case, assuming that there must be an *Aufgabe* in every trial and error, or learning, situation (e. g., Professor Perry in the article last cited). It may be remembered that we have already objected to Woodworth's lumping together the striving of the hungry animal with the efforts of a student to solve a mathematical problem. We too believe there is a fundamental similarity among all these cases, but the human determining tendencies (in intellectual purposes) seem so different physiologically from the hunger impulse that the point is a critical one. As we have already remarked, the ' striving ' of an instinct or appetite is accounted for by the continued impact of a relatively small group of stimuli, — the ' gnawings ' of hunger, set up by mechanical or chemical conditions within the body, the smell of food, and so on.

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[1] R. B. Perry, "Docility and Purpose," Psy. Rev., 25: 1–20 (1918) and other articles on purpose; H. C. Warren, "A Study of Purpose," Jour. Phil. Psy., etc., 13: 5–25, 29–49; 57–72 (1916); Lillie, *op. cit.*; Woodworth, *op. cit.*

But where does the stimulation come from in such endeavors as hunting a stamp or hunting a house? Any purpose which an adult human being can entertain consists of thousands of reflexes integrated into a single system, and each reflex is connected with a multitude of other purpose-systems, so that the chance of our responses being led off into irrelevant bypaths of other associations is large. Again, it is rather unplausible, that such a mechanical combination of reflexes as we must consider a purpose to be, can *select* new responses which have not previously been connected with it, and can keep the agent *trying* in a certain direction until its ' end ' is achieved.

The complexity of the processes makes any explanation in the present state of knowledge, unsatisfactory, but there are some suggestions to be made which tend to lessen the mystery. Most of us assume, with Titchener, that the determining tendencies have some kind of physical mechanism, including doubtless many habits which have become capable of operating unconsciously. Now let us recall Professor Holt's point of the ' recession of the stimulus.' The substance of it is that the *key* to any organism's behavior becomes a progressively complex object as the number of separate responses which the organism can make is increased. A man comes to have thousands and probably millions of individual reflexes, which are touched off, each by its appropriate stimulus — each "as fatal as sneezing," in James' phrase — but these reflexes are not coördinate, they are integrated or compounded in hierarchies. The larger responses, such as hunting a stamp or hunting a house or seeking fame, employ a great many identical reflexes, such as those of walking, of using the hands, the eyes, the affective responses, and so on. The largest of our constant responses, such as those to social position or to wealth or fame, contain the smaller, like hunting a stamp or hunting a house, as well as others of various grades. These compounds grow by accretion, just as the baby's originally complex response of rage grows to include rage at particular persons and objects. Each response differs from every other in its pattern, in the way its elements are linked together, somewhat as words differ though containing common letters, or tunes while containing common notes. Within each response the elements must cooperate harmoniously; but responses of the same order are frequently antagonistic because they involve use of some identical elements in different ways. We cannot hunt a stamp in our own house and hunt another house outside at the same time.

Through the learning process as we have so far described it, the agent acquires integrated responses to very complex and to some unreal objects, — to fortune, fame, truth, justice, as well as to ice cream and tobacco. One important class of objects to which we respond is the motives of other people, which we from this present study, have good reason to know are extremely complicated. Now so long as the elements of the large response (or *wish*, as the Freudians would call it) are adequately adjusted to the outer situation — that is, so long as the man knows just how to carry out every step in his purpose — we have no difficulty in conceiving the mechanism of it. It is a pure automatic habit.

But occasionally the response as a whole is aroused, on the conditioned reflex principles that we have exhibited, by some stimulus *associated with* the complex object of the total response, and yet some of the smaller reflexes are impeded by an ambiguous outer situation. The unstamped letter and images of former experiences arouse a response which is, as a whole, directed toward a hypothetical stamp existing in the agent's house; but on going to the usual receptacle, no stamp is found there. The traveler, because of various indications, believes he is going toward a certain destination, but he comes to the fork in the road. In this case the man has a purpose which he does not know just how to realize; the situation has become a problem.[1]

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[1] The object of a purpose may, evidently, be unreal and 'imaginary.' There may be no stamp in the house, and no such destination as the traveler is seeking. There

And so, when the minor constituent responses of the purpose are impeded by the ambiguous arrangement of external objects, the neural impulses from the elements which have been aroused break over into other possible subsidiary reactions, which are thus ' tried out.' The higher or more generalized parts of the response continue active because of continued stimulation from the clues which ' mean ' that the object of the purpose must exist somewhere (the unstamped letter, for example), and their energy finds outlet in successive smaller responses, such as going from nook to nook where stamps might be concealed, or up one branch of the road looking for more evidence. These newly-called elements evidently are also habitual; one does not try any expedient about which he knows nothing at all. They are also ' relevant ' to the purpose, because the higher parts of the purpose must already have some degree of associative connection with them, in order that they may be aroused at all. What sets the purpose at rest and thus seals a minor response as the solution of the whole problem, is the completed operation of the whole response, including perception of the customary and expected results.

These hints, which are far from an analysis, indicate something of how the mechanism of the higher learning processes, called purpose and reasoning, may finally be worked out. The details are not of immediate importance for our purposes, but the general principle that rational activity is only an instance of the learning or habit-forming process is of vital importance, for it clears up most of the dispute between ' intellectualism ' and ' anti-intellectualism.' This general identity of reasoning and learning is accepted by a considerable number of the most authoritative recent writers on rational processes, as our citations have shown, and so almost any of the particular theories we have used in elaborating it may be overhauled (such as those relating to con-

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may be no possible perpetual-motion machine, though inventors are always seeking it. Still the situation is always definable though more circuitously, in terms of real past associations and real present stimuli. The trout which leaps at a sportsman's ' fly ' is in a sense responding to a live fly which does not exist, but he is incited by real visual stimuli the like of which he had previously experienced in contiguity with real flies. This point of unreal objects is much stressed, a little too paradoxically, by Professors Holt and Perry.

sciousness) without overthrowing our broad conclusions as to the nature of the continuity between instinct and reason. As in the biological theory of heredity the obscure physiological mechanisms are matters of warm dispute but the general facts of heredity are known beyond question; so here, the assimilation of rationality to learning is more secure than is knowledge of the minute physiological processes involved.

It is hoped now that the generalized conception of a motive, given in Chapter I — i. e., a behavior-mechanism which makes the subject prepared to act in a certain way with regard to a certain object in his environment, so that his behavior is a (mathematical) function of that object — has now been made clear. Such mechanisms, we have seen, seem to be fundamentally of the same character, whether the object be a source of light rays and the behavior a swimming toward it, or the object is a kingdom or the love of God, and the behavior a many-sided endeavor to win it. Each apparatus is composed of reflex elements which are almost identical in their method of action, presenting very different practical problems, according as they are innate or acquired. The difference between motives, once they exist, is in the number of elements and in the pattern of their arrangement, like the difference between Paradise Lost and the latest popular ballad.

CONFLICTS OF MOTIVES — PERSONALITY

Now consider the relations of the different motives to each other within oneself, within one body. The total bundle of motives or response-mechanisms constitutes the personality. As we have intimated, a body may develop antagonistic motives, motives which perhaps get on well enough when they are aroused only at different times, but which are occasionally innervated simultaneously by a dilemma in the outward situation, and which then try to make the agent do incompatible acts. This conflict is usually unpleasant, because the thwarting of practically any response after it is aroused calls out instinctive rage-reactions. We recognize this situation as provocative to reasoning, but often no way of satisfying all wishes can, in the nature of things, be discovered, and one or all must inevitably be ‘ suppressed.’ Doubtless all the inclinations of no person dwell together in perfect harmony. As James said

> I am often confronted by the necessity of standing by one of my empirical selves and relinquishing the rest. Not that I would not, if I could, be both handsome and fat and well-dressed, and a great athlete, and make a million a year, be a wit, a *bon-vivant*, and a lady-killer, as well as a philosopher; a philanthropist, statesman, warrior, and African explorer, as well as a ‘ tone-poet,’ and a saint. But the thing is simply impossible. The millionaire's work would run counter to the saint's; the *bon-vivant* and the philanthropist would trip each other up; the philosopher and the lady-killer could not well keep house in the same tenement of clay.[1]

In most cases there is a majority rule, and the few wayward purposes are exiled by inhibition, because they are weaker than the collective force of the others, but sometimes when the latter are unusually dormant, the wayward one is strong enough to gain control of the body. In double personalities, the motives are divided into rival camps which alternately gain possession of all the motor apparatus. We recognize all these phenomena as the ‘ special field ’ of the Freudian psychologists.

The Freudian Psychology

With a few exceptions, the Freudians use a terminology and set of ‘ psychical laws ’ which are peculiar to themselves, having in common with other varieties of psychology only such subjective concepts (memory, association of ideas, pleasure and pain, for instance) as were current in orthodox psychology when Freud started his work in the '90's. Some members of the school explicitly repudiate any attempts to connect physiological processes with their concepts ‘ complex,’ ‘ dissociation,’ ‘ repression,’ ‘ conflict ’ and the like.[2] Freud is more hospitable to evidence from physiology, but his own suggestions are extremely vague and ambiguous.[3] Most of his disciples, and the variant Jung school, attach more mystical potencies to these introspective entities than does the master, but Holt has made a noteworthy effort to exhibit the Freudian psychology in terms familiar to modern psychologists of the schools. His analysis of the ultimate nature of motives is acceptable to his ‘ behaviorist ’ colleagues, but they question with considerable reason whether he is accurately representing Freud, as he purports to be.[1] Certainly there are many suggestions in Freud which can be substantiated in ‘ behaviorist ’ terms, but there are also many which cannot.

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[1] Briefer Course, p. 186.

[2] B. Hart, *op. cit.*, p. 17.

[3] See his Interpretation of Dreams, e. g., pp. 478 ff. (3d London edition of translation, 1915).

The doctrine of the subconscious or unconscious, with its corollary of repression, comes near being the heart of Freud's system. We have his own word for that. The two ‘ selves,’ conscious and unconscious, which he believes every person to possess, correspond pretty closely to the older psychological concepts of feeling and intellect. The self which in the waking and normal state has control of consciousness is an intellectual person, having associated ideas and planning circuitous methods of fulfilling the agent's wants. The subconscious self is a being of pure desire; it is the system of original wishes (sex and hunger, apparently, to Freud; or just one generalized ‘ stream of desire ’ or ‘ libido ’ to many of the school), and it knows nothing of indirection. It insists on immediate fulfilment. Such wishes as are compatible with the foreseeing policy of the intellectual self become matters of consciousness; such as are not compatible, because of the painful conflicts they bring about are banished from consciousness altogether. (Freud assumes the inhibiting power of pain in all possible connections, just as common-sense interactionist psychology always has done.)

But this banishment is not fatal to the exile. A suppressed wish, thinks Freud, never dies. The repressed sexual desires of nervous patients invariably originate in the first three or four years of childhood, according to him. These exiles frequently disguise themselves in socially acceptable ideas or in humorous sallies and thus pass the ‘ censor ’ of consciousness. In sleep the censor relaxes vigilance somewhat and less disguise ordinarily is required. In the more trying circumstances of repression, the disguise assumed is some hallucinatory bodily pain which had been somehow associated in actual experience with the 'affect' or desire, and here we have the hysterical stage of the nervous disorders which the psychoanalysts study.[1]

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[1] J. B. Watson, "Does Holt Follow Freud?" Jour. Phil. Psy., etc., 14: 85–92 (1917).

The theory of the cure is rather more obscure than that of the disease, in Freud's writings. He finds that a cure is always effected after he discovers, by interpretation of dreams and of free associations, the wish which has been suppressed, and its connection with the beginnings of the disorder; and then forces the patient to remember these matters,—when he overcomes the 'psychic resistance' of the censor. Holt interprets the condition of health as the reconciliation of all the subject's impulses or wishes, so that each finds some measure of expression and is not completely thwarted.

The old theory of 'sublimation' is much exploited by the Freudians, as it is in line with their other doctrines. According to this theory, many impulses which it would be disastrous to satisfy in their original form may be pacified by psychologically related activities which are not incompatible with the other wishes, as the direct expression of the first impulses would be. Religion and art have long been supposed to give scope in an indirect manner to the sexual appetite, and we remember James' suggestion that in athletic and similar peaceful contests a 'moral equivalent of war' might be found, which would drain off harmlessly the energies of the pugnacious instincts without damming them up.[2]

EVALUATION OF FREUDIAN DOCTRINES

Now let us see if anything can be made of all these doctrines in terms of the more commonplace psychology we have been using. In the first place, the subconscious is not a pure myth. It corresponds in some degree with the activities of those neural mechanisms which we have already dealt with, firmly fixed habits which have come to operate at times unconsciously. Such mechanisms we believe, with Titchener, make up part of the 'determining tendencies' in many if not most of our voluntary actions. Their existence is usually not suspected, because there is no conscious report of them, and so we cannot tell 'why' we do things; but what we do is fully accounted for by the history of our own nervous system.

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[1] See Freud's Selected Papers on Hysteria and other Psychoneuroses, Brill's translation, N. Y., 1912. The papers were first published from 1895 on. His Interpretation of Dreams also contains many references to his treatment and cure of nervous diseases.

[2] Freud's few vague observations on sublimation are in Three Contributions to the Sexual Theory, Brill's translations, 1910, pp. 38, 77, 82. McDougall thinks there is something in the theory and discusses it further in a Supplement to his Social Psychology.

As to conflicts and repression, and transfer of 'affects' (emotional reactions) from originally affective to originally indifferent objects, we have pretty well accounted for these by our discussion of the physiological correlates of emotion and affection, and by the old-fashioned principles of association as slightly amplified by the new-fashioned facts of the conditioned reflex. As Watson says, it appears probable that the 'functional' nervous diseases which the Freudians treat are fundamentally due to unadaptive habits, as would be the case with a 'neurasthenic dog' that had been trained to reject meat, to wag his tail at a harsh word, and to make other unnatural responses.[1] One cannot fail to be struck by the constant resort which Freud has to association of ideas; about nine-tenths of his writings are devoted to tracing these devious connections.

In connection with the divination of wish-expression in dreams, in lapses of memory and in slips of the tongue, also particularly in the 'rationalization' of contradictory principles by a given person, we must remember that any train of thought or imagination is in some sense the acting out of a series of established reactions, instinctive and habitual. Every such established reaction is a wish, and is a strong one if there are actual inner stimulations of hunger, sex, of other discomforts of various kinds arousing it. In many circumstances these reactions are more easily carried out in imaginal terms than in overt action; for instance the cat in the puzzle-box. His saliva is flowing long before he finds the solution

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[1] "Behavior and the Concept of Mental Disease," Jour. Phil. Psy., etc., 13: 589–597 (1916). "The central truth that I think Freud has given us is that youthful, outgrown and partially discarded habit and instinctive systems of reaction can and possibly always do influence the functioning of our adult systems of reactions, and influence to a certain extent even the possibilities of our forming other new habit systems which we must reasonably be expected to form," p. 590.

— he 'imagines' himself eating — the wish is father to the thought. And similarly with ourselves, when the external situation baffles our reactions, we have to content ourselves with dreams or imagination, which can often conveniently disregard the obstacles. When the wish involved is obscure or invisible to consciousness, as in certain lapses of memory or slips of the tongue, or in rationalization, we must suppose that it is a mechanism whose explicit consciousness has decayed, like the mechanism which causes us to write the wrong words sometimes on the typewriter.

Our attitude, then, toward the Freudian psychology is briefly this: We believe that their neglect of the minute neural mechanisms of the mind will result in many of their sweeping generalizations being overthrown. We doubt if their formulas of the everlasting life of wishes, and of the behavior of wishes under suppression, will hold of all human motives; we think these are too hasty generalizations from the phenomena of hunger and sex, which, as we have seen, have physiological cycles that are peculiar to themselves. The other fundamental groups of instincts, such as rage, fear, striving for social approval, may indeed be incapable of permanent suppression because the external stimuli exciting them cannot be totally abolished, but that is a different matter from a gnawing canker of discontent pent up within the subject himself. So far as the stimuli to rage and fear can be removed, apparently these instincts can be harmlessly suppressed; and so far as the stimuli to emulation or self-assertion or parental behavior can be manipulated by social control, the behavior arising from these instincts can be controlled.

But on the other hand, by their going beyond mere introspection and considering also the implications of our gross behavior, the Freudians have thrown remarkable light on the unconscious determining tendencies. In our view, to be sure, these unconscious mechanisms do not have the canny and cunning intelligence which the Freudians impute to them, — they are not so many little men inside the skull of the subject. But the Freudian researches have made it impossible for other psychologists to ignore this hidden apparatus; and so they have contributed substantially to the conclusion that the human reason is wholly a matter of instincts and habits (or associations), and therefore is often led astray from the truth by passion or by incomplete associations, such as those which land the mouse in the trap, the trout on the hook.

ARE INSTINCTS THE PRIME MOVERS?

If we raise the question now whether McDougall is correct in saying that the instincts are the prime movers to action, our answer will summarize pretty well the whole foregoing psychological discussion. His view is

> By the conative or impulsive force of some instinct (or of some habit derived from an instinct), every train of thought, however cold and passionless it may seem, is borne along towards its end, and every bodily activity is initiated and sustained. The instinctive impulses determine the ends of all activities and supply the driving power by which all mental activities are sustained; and all the complex intellectual apparatus of the most highly developed mind is but a means toward these ends, is but the instrument by which these impulses seek their satisfaction, while pleasure and pain do but serve to guide them in their choice of means.[1]

If these impulses were removed, he adds, the body would be like a steam engine whose fires had been drawn.

That qualification "or of some habit derived from an instinct" may constitute a 'joker' in his thesis. Woodworth asserts that the chief object of his own book is to controvert McDougall on this head, by showing that "Any [response] mechanism — except perhaps some of the most rudimentary that give the simple reflexes — once it is aroused, is capable of furnishing its own drive and also of lending drive to the connected mechanisms." [2] This proposition evidently is in line with our guess at the apparatus of the determining tendency or purpose, in reasoning, which we have developed above. Woodworth then shows that it is necessary to distinguish between the motive which leads a person originally to take up a new activity, and the motive which sustains him in that activity after he has become 'interested in it for its own sake.' The child can be induced to take up certain studies at school by appeals to his self-feeling, including rivalry with other children and by excitation of his curiosity or explorative tendencies. And the young man chooses an occupation considerably with a view to the remuneration attainable, which will afford creature comforts and other instinctive satisfactions; partially also with a view to the social consideration he will enjoy.

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[1] Social Psychology, p. 44.

[2] *Op. cit.*, p. 67.

But invariably some of the people thus lured into such tasks become absorbed in the subject-matter of the tasks; one keeps exploring its possibilities with increasing zest, and forgets the ulterior impulses which induced him to enter upon it in the first place; while other individuals either drop the task altogether, satisfying their original drives by saying that it is below their gifts, or else they have constantly to remind themselves of the extraneous inducements, to watch the clock and think of pay day. Even in the latter case, it is true, ' quitting-time ' and pay day mean not merely the satisfaction of original instincts and appetites, they mean also opportunity for absorption in some acquired activities which have become interesting for their own sakes, such as following baseball scores or playing a fiddle in solitude. The facts that everyone's attention is strongly concentrated from time to time on the mere activity he has come to love, and that the intrusion of self-consciousness, of thoughts as to whether he is making a good appearance, will only spoil his work, are taken by Woodworth to prove that McDougall's picture of the actual motives of men is a distorted one, and that an acquired drive moves us by its own power (pp. 67–75). He points to McDougall's recognition that an act originally undertaken as means to an end sometimes becomes an end in itself. "Nothing is commoner," says McDougall, "than that the earning of money, at first undertaken purely as a means to an end, becomes an end in itself." [1] We have met this idea several times in Hartley and the Mills; we would hardly expect to find it in McDougall.

Reconciliation of Associationists and Functionalists

Our opinion, however, is that the associationists, McDougall and Woodworth are all largely in the right. As we have seen, the most plausible physiological theory is that pleasure and pain (or unpleasantness), as well as the emotions, are correlated with instinctive reactions, which are reactions that include inner bodily changes lending vigor to the whole body. The subjective feelings of comfort and discomfort, pleasantness and unpleasantness, whether emotional or not, appear to be invariably attached to definite instinctive response-complexes.

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[1] *Op. cit.*, p. 349.

We know further that instinctive responses can be attached to learned responses or stimuli, upon the conditioned reflex principles, which correspond very closely to the old laws of association. In this way one learns what are the pleasant and unpleasant things of his particular world, and he comes to like and hate all manner of things which had no instinctive interest to him, or even have no causal relation to the satisfaction of his instincts.

This learning process continues throughout life, so that the inner reactions which give pleasure or unpleasant feelings are constantly being shifted from one attachment to another. What we loved yesterday, we hate or are indifferent to today; what we hate today we may love tomorrow. It has been seen, furthermore, that many connecting links or reflexes in these response-chains become unconscious as they become firmly habitual, like many of our motions in walking or writing, so that the course of the association is not discernible, — it plays no part in consciousness. If the steps by which these common habits are built up were less obvious we should hear a great deal about writing and piano-playing instincts.

In the extreme example of the miser who seeks money for its own sake, McDougall is largely right in saying that the instinctive reactions of pleasant feeling, which have become transferred to the habits of making money, are driving the man on. But the associationists were right too, in saying that it is a case of frequent associations of money with pleasure, and that the original connecting ideas have disappeared from consciousness but were once there. As John Mill remarked, no one considers the desire for money to be ' intuitive ' or instinctive, and yet to introspection it becomes just as much of a good in its own right as the 'moral sense,' and other alleged intuitions. And Woodworth is correct also, in saying that the man's interest and attention is now wholly absorbed in his money, for the acquired mechanisms loom larger in the total response than the instincts which led him originally to enter the commercial game, or the innate feeling-mechanisms which still shed the pleasant feeling around his gold.

People's absorption in various occupations may be traced, we believe, to three factors, in varying proportions: (1) the innate general bias or ability for a particular activity, (2) the many learned reflexes involved in its execution, and (3) the instinctive complex of feeling-reactions which has been gradually transferred to the response that is, as a whole, focused on ' the work.' The habitual mechanisms, that is, probably never operate in solitude, they are part of total responses which include various instinctive elements that give affective consciousness, and possibly some instinctive elements which are non-affective. Every activity which is ' interesting for its own sake ' undoubtedly does involve a number of instinctive neural circuits, such as those connected with manipulation and ' curiosity,' and those stimulating to exercise all the acquired response-systems (for instance, mathematical habits); and the interesting activity involves moreover a fringe of affective inner response, acquired through manifold associations of this 'work' with human approval, with domination, with the attractive possibilities of money, and so on. This fringe of inner reactions gives no clear consciousness while one is absorbed in his work, but it nevertheless contributes its vague aura to the feeling-tone of ' interest.' [1]

The stock criticism of ' associationist intellectualism ' — that the associationists supposed the whole chain of ideas which lead from a past pleasure to a contemplated action always to pass through the mind of the agent in determining his choice — is therefore of little weight.[2] Hartley, the Mills, Bain, all of them emphasized repeatedly that men are often not conscious at the time of action of all the associations which have led them to desire particular objects, because the linking 'ideas' are continually being dropped. It was the power of association of *experiences* which they kept steadily in mind, and which gave them and us one of the most important clues to methods of education and social control. It is also futile to represent them as saying that one laughs or cries for the sake of the calculated pleasure; they allowed for such instinctive reflexes, and expressly limited their pleasure-pain theory to voluntary actions. Mirth is a 'simple pleasure,' which is transferred to a variety of objects. The objects of mirth (or grief) are the subject of rational calculations in everyone, as is evidenced by the large business of purveying amusements. And the objection that it is the instincts, rather than pleasure-pain, which determine our so-called voluntary action, when we find that instinct and affection are most likely but two views of the same thing, becomes like saying it is health, not the body, which is improved by exercise, or that lads get on in the world, not by algebra but by hard work. It is the fallacy of different planes.[1]

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[1] Notice the statement of Herrick in his summary of pleasure-pain: "In the normal man these mechanisms may function with a minimum of cortical [conscious] control; giving the general feeling-tone of well-being or malaise, . . ." *Loc. cit.*

[2] McDougall's discussion of learning in relation to instincts (Ch. II) indicates that ' association ' to him means that all the original sensations must be imaginatively reproduced. Wallas frequently repudiates the associationist ' intellectualism ' in the same fashion, e. g., "We have learnt that if we see a man run away or burst into tears, we are not bound to infer that he does so because his reason has selected that action for him as the best way of securing pleasure or avoiding pain." — Great Society, p. 38.

THE MORAL WILL

But still we have not joined issue squarely with the anti-intellectualist position represented by McDougall on the subject of normal human rationality. As we have seen, he contends that the instincts are behind every impulse and thought; and such apparently must be the case on his theory, in all actions, whether reason has had anything to do with them or not. How then can he find an opposition between instinct and reason? What is 'reason' to him? He objects to the old associationist idea that reasonable action is normal in men, the truth being, to his mind, that "men are only a little bit reasonable, and are frequently moved to act in most irrational ways." What does he mean by "irrational"?

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[1] Wallas uses the parallel about algebra and work to protest against the opposition between instinct and reason set up by the anti-intellectualists, such as McDougall, Ribot, L. Stephen (Great Society, p. 39). Wallas realizes that there is no opposition between reason and habits and instincts, but his account of the relations among them is quite unsatisfactory. He says, for example, "Since . . . Thought is a true Disposition, it, like all other dispositions, has not only its appropriate group of stimuli and its appropriate course of action, but also its appropriate emotion," — Great Society, Ch. X, p. 231. He considers reason to be just one among the instincts, instead of an organization of instincts and habits.

He is thinking of a special case of reasoning, which we have not discussed, namely, deliberation over a proposed course of action, when the question we put to ourselves is not *how* can our purpose be carried out, but *which* purpose or impulse shall be allowed to prevail? In this very common situation, which varies from trivial decisions to great moral contests, we say in introspective terms that we 'turn the matter over in our mind,' that is, we think through all the implications which occur to us of each of the proposed courses. We try to realize as fully as possible, all that it means to do this, and all it involves to do that, in the hope that a decided surplus in motive power will appear on one side and so lead to volition in that direction. Bentham would say that we sum up the pleasures and pains, and automatically choose the course representing the greatest net pleasure; while his opponents point out that action is often 'in the line of greatest resistance,' or toward the greater unpleasantness.

This case, which seems very unlike the typical reasoning situation we have been analyzing, is really of the same nature. Each of the conflicting purposes (habitual or instinctive) would act itself out if it were not inhibited by the other purposes trying to make use of the body in other ways. That constitutes the ambiguity, the dilemma. Deliberation signifies that each purpose remains sufficiently active to check the others from getting over into overt action, while each alternately obtains use of the motor apparatus on the imaginal level, thereby acting itself out in ideas, exploring the consequences which the act would have so far as the associations (memory) of the agent permit.

The ideas of these consequences, moreover, arouse in idea still other responses associated with them; that is where the utilitarian idea of calculating pleasures comes in. I debate with myself whether to go home for lunch or to a restaurant; and as I 'mentally explore' the consequences or implications of my going home, I recall the apple pie in the pantry, whereupon my strong apple-pie seeking response joins its energy to the others which are trying to take me home. But instead of a response correlated with pleasure, a determining tendency which has pretty well lost its pleasurable correlate may be aroused. If I am contemplating taking a drink of liquor, there may be infinitely more alluring visions on the side of drinking, and yet a deep-laid complex of habits and instincts which I call ' principle ' may determine me not to, just as the shy man's habits of courtesy in James' illustration, take him to the social gathering which he dreads. In these latter cases the 'sum of pleasure' explanation is inaccurate, yet the associationist explanation is not far from right, for these obscure determiners are likely to be much more largely habitual than instinctive.[1]

This process of mental exploration of consequences, it is easily seen, is on a par with the testing process in abstract reasoning. In either case it is an adjustment between the subject's own responses which is sought; the difference between the two classes of problem is chiefly in the nature of the impulses or purposes which give the ' drive ' to the deliberation.

So that McDougall means by irrational action, not behavior preceded by no reasoning at all, but action taken without full consideration of all the consequences. He means rash and imprudent behavior prompted by over-powering instincts. But where does reasonable or rational action begin, in his view? How many of the possible consequences must be reckoned with in advance before one can be said to take the plunge ' rationally '? Is rationality the same as omniscience? As H. R. Marshall replied to Sidgwick concerning Aristotle's old problem, we may be sure that no man considers his action unreasonable at the time of decision; it is only in the light of his purposes as they appear to his consciousness afterward, that he judges he has acted irrationally.[2]

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[1] Titchener's dictum, corroborated in different ways by the ' behaviorists ' and Freudians, is: "*It is always the strongest impulse that wins*; though here, as also in the case of attention, it is not necessarily the impulse that looks the strongest to psychological observation; there may be a more impressive array of ideas on the side that finally gives way. The winning impulse, as we see in historical examples of selective action, is that which has the strongest backing of nerve-forces." — Beginner's Psychology, p. 248.

[2] Mind, January, 1894. Restated in Instinct and Reason (1898), Ch. XVI, sec. 4. Sidgwick's article on "Unreasonable Action," which McDougall takes as a point of departure, was in Mind, April, 1893.

We have seen no evidence that the associationists regarded human beings as infallible calculators of all consequences of their actions, and so we take their ' intellectualism ' to mean that people often do reflect somewhat on how their acts will affect their various purposes (which are in some sense pleasures), and particularly that people can be made to reflect more carefully by timely warnings and signboards.[1] This amount of ' intellectualism ' and ' assumption of human rationality ' is verified not only by every-day experience but by the best psychological evidence we have been able to secure. When we do consider consequences, the fact that our reasonings are based only on associations makes them frequently fallacious, as is the ' assumption ' of the chicken that he will always be fed.

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[1] We have been speaking of the theoretical psychologists among the associationists, who are usually included in the anti-intellectualist condemnation. To what extent Bentham and other popularizers of psychological hedonism preverted it with distressing social consequences (especially by means of the political economy of the newspapers and business men of the early and middle nineteenth century) is another question.

CHAPTER XIII

HOW MAY NEW MOTIVES BE INSTILLED?

Primitive Wants Soon Outgrown

It is but a step now to the vastly important subject which we have deferred: the methods by which effective new motives (or ' sentiments,' to use Shand's term) may be built up in human beings, and the possible range within which they can be made effective. We have little to offer as yet which is beyond the common property of moral reformers, yet a restatement of the psychological principles involved may be useful.

The notion which some people have derived in a roundabout way from the associationist psychology — that before each action every man hastily calculates the net advantage to be gained with reference to his original and primitive pleasures or utilities (meaning principally his own bodily satisfactions or pains, and the personal esteem in which he will be held) — is, of course, false. The ends which are considered by men to be good in themselves, with reference to which they do some calculating and make small or great sacrifices, are not fixed or uniform. They are as various as the objects to which the instincts (including emotions and feelings) and habits can be transferred by association. We come into the world all with very similar ' utilities ' or ' pleasures,' as the associationists knew, but because of our differing hereditary biases of ' interest ' and because of the variety of our associations in life, our utilities or ideals or motives (these all amount to the same thing, so far as the effect on action is concerned) come to differ enormously from person to person and within one person from time to time. The conscious records of these transfers or associations frequently disappear, and then we can give no rational account of *why* we want to tell the truth or to tell lies or attain other final objectives, we shall have to say if pressed "Because that's the kind of man I am." We want them just for their own sake. Hence it is a supreme blunder to suppose that men in general are, or necessarily always will be, appealed to chiefly through their primitive wants; and it is equally erroneous to suppose that instincts must be assumed to account for all the broadly similar lines of human activity.

The instinct and appetite groups do leave their marks on our sophisticated motives, it is true, and knowledge of the instincts does help us to appeal to the most powerful impulses. We learn to satisfy our hunger and to deal with our sex appetite in certain individual ways, and other methods of satisfaction become often impossible to us. We are all moved by the desire for approbation, but we have different standards of approval, — to some players, as Hamlet said, the censure of one good judge must outweigh the applause of a whole theatreful of others. We develop idiosyncrasies of fearing and hating, and so on. Consequently a stimulus which will arouse a response built upon a certain instinct-group in one person will not arouse the corresponding instinct-group in another. But there remain similarities enough within these classes of mature motives so that food purveyors can make effective appeals to a generalized appetite, promoters of county histories can find plenty of subscribers by flattering the numerous 'leading citizens,' authors can exploit the sex interest by best-seller novels, and politicians can play on the sympathy and hate of their audiences. There seems to be promise that social science will develop sound generalizations of more and more scope, as psychological evidence in its multitude of forms accumulates.

Emotional Drives to Establish Necessary Habits

Such evidence will help us not only in dealing with men as we find them, but in training the rising generations to better and better social adaptation. Watson and Morgan suggest, in the conclusion of their report on emotional reactions in infants, that the possibility of transfer of affective responses to indifferent objects by association, on conditioned reflex principles, points to the use of emotional drives to establish prosaic but necessary habits.[1] Interest or added energy can be drawn from emotional reservoirs in school, not only by methods of presenting the material, but by the teacher's personality. Fear of discharge, rage at ridicule, appeals to loyalty are similar devices long ago hit upon by practical men in the industrial world; and the money reward, by the feelings which have been transferred to it from all manner of pleasant experiences that it has secured, imparts zest to the task upon which receipt of money depends.

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[1] *Op. cit.*, pp. 172–174.

We have not said anything so far about conscience or religious fervor, but clearly in the view of our commonplace psychology, these forces are strongly emotional and are largely built up by experience. There may well be some specific instinctive roots, such as kindliness or sympathy, fear or awe at the world at large and at supernatural rewards or punishments; but the particular things which these motives prompt people to do are only explicable, as John Mill explained them, by long, pervasive training. Emotions of fear and love have been transferred into these complexes, and particularly is the desire of approval and dread of disapproval to be discerned. We know what supreme power the religious and moral conscience has wielded over men in all ages, in the various forms of fanaticism, devoutness, class or professional standards (*noblesse oblige*, for instance), down to our least pretentious ' principles '; and so this old form of social control can be elaborated in the future in the service of new ideals.

Reiterated and manifold associations of the ideal object with our elemental and normally-acquired motives, are the chief factors in the conscience and religion-building process. Most of us have now a prejudice in favor of truth, and so we consider that these associations to be preached in the future should be true causal ones, — in other words, we think that in the long run the truth will make men free, and also harmonious with each other. But if it should prove that over and above knowledge, good-will must be inculcated for the sake of the general welfare, the wise moral leader will be able to promote enthusiasm for the new and artificial ideals by associations of contiguity and similarity with the more primitive objects of emotion, when there is no necessary causal relation between the two.

The person who wishes to advance the cause of humanity, in other words, has two possible lines of action, both made possible by the psychological principles of learning or association which we have been surveying. He may utilize our learning capacity, and his own, to teach us how *more economically to realize our present wants*, — this is the purely intellectual effect of knowledge. We can be depended on to adopt any short-cut methods which are pointed out to us for the satisfaction of our existing desires. He may, on the other hand, utilize our learning mechanisms to *create new wants* in us, wants which will make us more harmonious with each other and with nature, by associating new (and ' better ') ideals with our old wants, particularly with our emotional interests. Mr. Hoover's education of our conscience in regard to food conservation was along both lines; he showed us how we could help win the war, which we already wanted to do; and by means of stories of the suffering across the sea, he made our want to save food still stronger. The story of how much we owe to the sufferings of noble men of long ago, for example, always stirs us to do something for the general welfare, even though it is quite possible for us to take the benefits which have been handed down to us without bestirring ourselves to help the society of the future.

The words of two wise masters will show how well these principles have been understood in both modern and ancient times. William James counseled school teachers,

> Since some objects are natively interesting and in others interest is artificially acquired, the teacher must know which the natively interesting ones are; for . . . other objects can artificially acquire an interest only through first becoming associated with some of these natively interesting things. . . . *The two associated objects grow, as it were, together: the interesting portion sheds its quality over the whole; and thus things not interesting in their own right borrow an interest which becomes as real and as strong as that of any natively interesting thing.*[1]

And it was Pythagoras — was it not? — who said: "Choose that course which is most excellent, and custom will render it most delightful." Plato, too, was much concerned with elimination of the anecdotes attributing immoral acts to gods and heroes from the epics of Homer, before these should be told to the young. "It is most important," he said, "that the tales which the young first hear should be models of virtuous thoughts." [2]

[1] Talks to Teachers (1899), pp. 91, 94.

[2] Republic, Bk. II.

The effectiveness of such short-cut emotional appeals, of associations which arouse new interests rather than show logically how to satisfy old ones, is well known to advertisers and to many other masters of practical art (to the astonishment of many observers ' that people can be so illogical ').

The rational moralist tries hard to believe that "Knowledge is Virtue," — i. e., that our existing wants would be harmonious if we only had sufficient knowledge; but if he finds himself in doubt on that head he often frankly counsels the propagation of socially useful illusions.[1] But we believe the above-stated psychological principles point toward a better bridge between egoism and universalism, not through illusion but through the development of ' sentiments ' or new motives for old. In this there need be no deception and so no possibility of disillusionment. If we had to regard the existing human wants, or the wants which have existed in the past, as immutable, then fiction-making and the mailed fist of the state would doubtless be the only alternatives to that warfare of each against all over which Hobbes shuddered.

Natural Limits to Perfectibility

There are, of course, natural limits to the educability of motives, and they set bounds to reforms in wants, whether by preacher, legislator or advertiser. (There are also limits, undoubtedly, to the human ability to acquire knowledge, though our race may indefinitely advance in it.) What these limitations are is an uncertain matter.

There are, in the first place, certain external conditions to which we must conform, or our social group will perish. Professor Carver has developed this point clearly. To use one of his illustrations, the Moslems have instilled into their people an aversion to pork; that is an artificial ideal which does effectively control their conduct. It is only one of thousands, which are just as effective, throughout the human family. But scientific experiments show that the hog is a much more economical converter of plant substances into concentrated human food than is any other beast, and so pork-eating groups have an advantage over the Moslems in the competition for survival. Similarly as to the general organization of individual motives which we call altruism; apart from the question how far it can possibly be made effective over most people, there is the question of how a given degree of self-preference will work with reference to the situation of man in nature.

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[1] E. A. Ross, Social Control; B. Kidd, Social Evolution.

In the second place, our common instinctive and other physiological endowments set limits to the refashioning of our wants. We cannot learn not to want food, nor to hate our children. Can we learn to love our enemies? But there have existed a great variety of *ways* of satisfying these stubborn wants through historical times. The Spartan methods of loving children were what we might use if we could hate them. The urgent sexual wants have been repressed effectively by customs, by vows, to varying extents, and it is still an open question whether they may not be further repressed than is generally done without any injurious consequences. As to selfishness or avarice, which are commonly supposed to be natural barriers to extensive reforms, these are mere *complexes* of elementary wants, which are of quite different appearance when their constituents are reorganized. For example, selfish strife for social approval has a totally different effect, according as social approval is given for large collections of human heads, or is given for peaceful, ' law-abiding ' conduct. And so, while many ideals are doubtless not ' humanly possible,' it is practically impossible at present to say what they are.

A third limitation is set, not by our common endowments, but by our differing individual mental endowments, our differing innate abilities. This subject is more obscure even than the general behavior-mechanisms we have been discussing,[1] but even from rough observation we may doubt if any person's character is wholly at the mercy of his social environment. We have seen that besides the specific instincts there are apparently larger neural structures which are hereditary and give a special bias to the learning of the individual, although they do not determine any exact responses. Some native peculiarity of taste and ability is characteristic of every one of us, it would seem, since children of about the same training develop strikingly different abilities. This ' about the same training,' however, covers a multitude of differences, and carefully sifted evidence is still scant. It may be granted to the social psychologists that the individual's character is quite largely a social product, that customs and institutions are among our most important teachers, that we are to some extent molded by physical and social influences; [1] but the innate factors of ' nature ' which cannot be reduced to nurture, are much to be reckoned with in the future. The special significance of these individual differences for reforms of motives, as we shall point out in a following chapter, is that all people are not equally susceptible to the development of a given ideal, such as benevolence.

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[1] Thorndike has devoted to it Vol. III of his recent Educational Psychology, with data gathered chiefly in the public schools.

The extent of each of these various limitations is a matter to be established empirically and statistically, far more than by psychological principles. Economic data, business and sociological experiments, historical study, and many other sources will all yield valuable evidence if studied scientifically.

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[1] When Cooley claims that the old opposition between 'individual' and 'social' is entirely false, because the individual is a social product, he is going a little too far, however. When the young man fights and dies for his country, there is a conflict between the interests of society and of the individual which is no mere figure of speech.

PART III

SOME APPLICATIONS OF PSYCHOLOGY TO PROBLEMS OF ECONOMIC THEORY

This Part is of a more technical nature than the preceding sections, and presupposes some familiarity with economic principles

CHAPTER XIV

THE PRESENT STATE OF ECONOMIC PSYCHOLOGY

Hedonist Premises Broadly True

The reader who is familiar with economic discussions will not have failed to apply for himself the fundamental principles of motives, which we have set forth above, to various economic problems in which he is interested. Our chief object, in fact, is to make contemporary psychological views more conveniently available to economic students, so that such students may work out any consequences which seem to them important. As a beginning in this direction, however, we shall indicate some of the more obvious applications of our study to the analyses of consumption, value, saving, and work. Our treatment is avowedly tentative and sketchy, for each of these topics is extremely large by itself.

At the outset it is evident that our conclusions will have a conservative and ' intellectualist ' slant, for we have found that recent work on habit and instinct tends to confirm, much more than James and McDougall would have us believe, the old common-sense hedonistic assumptions that people usually act for the sake of expected consequences and that they are constantly learning more and more economical means of getting whatever objects are pleasing to them. That is to say, all people are ' rational,' in the only reasonable sense of the word. And we are moved to work by ' utilities ' which, for the most part, are derived from economic goods. These broad premises of the classical and marginal utility economics are still unshaken.

Of course many economic laws, as Bagehot says, are only first approximations, or smooth diagrams which describe the main forces but leave innumerable minor ones to be filled in. Competition, self-interest, mobility of labor and capital, knowledge of where one's best economic opportunities lie and unhindered ability to pursue them, are only roughly to be found in the real world, but these words all describe biases which can be constantly counted upon, very much as the action of gravity or the force of a wind can be counted upon in spite of the effects of countervailing forces. The laws in all other sciences are approximations too: a falling apple is not completely true to the gravitation formula because of interference by the air. All sciences, therefore, have to resort more or less, as ours does, to the great principle of *inertia of large numbers*, — that is, in a large number of observations, when one or a few grand forces are in operation, the 'random' errors, or variations due to minor forces, offset one another, and the average of the whole series is found to agree pretty closely with the theoretical effect of the main forces. Statistical inductive methods applied to mass phenomena must be used to prune and check deductive reasoning, in all these fields, because it is practically impossible to isolate completely the operations of one force or 'law.'

This dependence upon the statistical tool is nowhere more marked than in contemporary psychology; and consequently the economist will get more enlightenment upon most points of economic psychology from his own behavior-statistics than from anything in the doctrines of psychologists, who have not yet gotten around to the special problems with which the economist is concerned. Statistical curves and deviation-measures of learning, of 'intelligence quotients,' of conditioned reflexes, and of many other phenomena are being collected and analyzed in the laboratory; but if we inquire into particulars concerning the motivation relations of saving and the interest rate, or of work and wages, the psychologist can give us only a general reply which needs exhaustive elaboration from economic experience tables.

We must avoid, therefore, both undue expectations of psychological touchstones, and undiscriminating rejection of the hedonist premises of the classical and marginal utility economics. But still we may find, in the modern formulation of motives, clues to new angles of attack on our own problems.

CHAPTER XV

APPLICATIONS TO ECONOMIC WANTS

The Nature of a Want

What precisely is a want? It *always* involves a response-mechanism of sense-organs, nerves and muscles, set up ready to do a definite piece of work when stimulated. This is the objective aspect of a want; anyone can observe whether a man's action toward an apple is buying, eating, or indifference. *Usually* also there is a subjective side, which is the man's consciousness of what he does or is set to do. Sometimes only this side can be observed at all, by methods now available: the man merely thinks "I would like to have an apple, but it's not worth while," as he goes past the fruit stand. But in this last case also, as we have seen, certain of the man's response-mechanisms are active. These are predominantly vocal, but salivary, other internal, and perhaps the beginnings of stopping and reaching out are involved too, though not in such fashion as to be evident to the bystander unless the latter be equipped with very delicate instruments. In this case we shall have to take the man's word for it that he has an 'ineffectual' desire for an apple; yet we must interpret and account for that desire just as we do for any response of which he is capable. Sometimes when he reports that his motives are concerned only with right and justice, we find that his actions — including these protestations of disinterestedness — center about the amassing of property for himself. (Attempting to prove the universality of this sort of behavior is the peculiar sport of economic interpreters of history.) In such a case it is clear that the subjective, 'conscious' report is entirely inadequate to a true view of the motive-situation.

In brief, as we have reiterated in the foregoing chapters, the physiological, objective behavior-series alone is a complete series; and so we propose in our analysis to use the objective terminology rather than the concepts of sensations, streams of consciousness, psychic income, feelings or other subjective entities. This program implies no adherence to any particular doctrine of the Freudian psychology except the commonplace of unconscious or 'subconscious' responses or motives; and it differs from the psychic accounting of Fetter and Fisher only to the extent that the subjective side of motives is incomplete. It is essentially the program of all generations of economists, for they have always drawn their premises as to human motives from what they saw men in the mass *doing*, much more than from their own solitary introspection. The economist is a behaviorist, trying to find what people can be depended upon to do in certain common situations. "Actions speak louder than words."

EVOLUTION OF WANTS

There are two broad aspects of the consumption of wealth which are of special interest to economists. That which has claimed most attention so far is the psychology of wants in relation to value, — diminishing utility, and matters connected therewith. When writers speak of the increased importance which consumption has attained in economics, after the manner of Jevons,[1] they are usually referring to the advantages derived from the marginal utility contributions to value. 'Psychological schools' of economists, in general, are simply marginal utility enthusiasts.

The other aspect of consumption with which we are concerned is the evolution of wants: how people come to want just what they do want. This latter topic is the ground of most of the economic controversy over hedonism, and is also the chief interest of the social-value school. If their theory were called 'social utility' instead of social value it might make matters clearer to most of us. Böhm-Bawerk brushes aside this line of inquiry, and insists that the theory of value takes wants for granted. He cares not *why* people like or dislike as they do; he notes merely that their choices, their actions, indicate what they do want, and his business is to show how these individual choices work themselves out into market value.[1]

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[1] E. g., M. Roche-Agussol, La Psychologie Economique chez les Anglo-Americains (1918), p. 39: "The study of consumption, traditionally considered as a post-economic study, becomes more and more a body of principles dominating the whole of the science."

This division of labor seems legitimate to us, even if the social-value contention as to the instability and constant interaction of individual wants be granted. Consequently we shall postpone most of the questions on utility to another chapter, and shall take up now the subject of mutations or evolution of wants.

The usefulness which any light upon the natural history of wants would have has already been touched upon in our first chapter. There is interest both in the understanding and in the control of economic behavior; and study of the genesis of existing wants furnishes a clue not only to understanding and playing upon existing motives, but also to possibilities of grafting, pruning and training motives into new directions. Obviously consumers' wants, using the term broadly, determine not only what things are to be produced, but what appeals and incentives are necessary to get them produced. It is no doubt true, as Hobson and others frequently remind us, that in many cases a producer can ' create ' a demand for his product; but plenty of bankrupt producers — imitators of Coca-Cola or what not — who have tried such a campaign, can testify that it is not invariably successful. The limits of educability of demands is thus an important issue. Profits are usually to be made by supplying the most urgent wants — except to the extent that inequalities of wealth or of persuasive power give one person's want a greater influence over production than the want of another — we need not now go into the fine points of that line of argument. Hence, whatever improvements in welfare may be possible through inventions like labor-saving machinery, improvements in distribution of wealth, parliamentary government, or other social procedure, one great reform is somehow to make people only want more nearly what is good for them.

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[1] Pos. Theorie, 3d ed., pp. 310–330.

TRANSFER OF DERIVED WANTS

Wants develop, of course, from the interplay between the individual's hereditary (instinctive) equipment and his external world. Both inner and outer items are variable in some respects between individuals. The instincts are probably always seeking or avoiding (positive or negative) reactions;[1] some of them being connected with physiological appetitive mechanisms which provide periodic inner stimulations independently of the outer situation, others being responsive only to certain outer stimuli which may never be encountered. These primitive desires or aversions, as we may now briefly call them, when aroused, often or always have conscious correlates of emotion, or of pleasantness and unpleasantness. So that our 'liking' a thing, and our trying to get it, are merely two ways of describing the same phenomenon; we cannot scientifically say that one proceeds from the other. These instinctive groups, which we isolated as well as we could in Chapter IX — mainly hunger, fear (including aversion to painful stimuli), rage, sex, parental manipulation, gregariousness, desire for social approval, and, quite probably, the impulses toward laughter — stake out the main lines to which our wants always conform.

But only broad and vague lines. From birth onward, our human learning capacity and the individual peculiarities of our experience lead each of us ceaselessly to acquire habit-mechanisms that supplement (and often quite transform) the instinctive responses; so that there results the confusing variety of individual 'interests.' "One man's meat is another man's poison," and "There is no disputing over tastes," etc. Part of this variability, to be sure, may well be due to inborn differences, rather than to mere discrepancies of experience. This is the disputed question of aptitudes such as musical. It is also observed that children — after a few months of infancy — form new habits more readily than do adults; "old dogs find it hard to learn new tricks." These commonplaces cover a world of baffling problems for the psychologist; in time he will tell us more exactly what mental differences are actually innate and how the range of learning capacity varies with age. But at any rate, human adaptability and plasticity is so great that accurate generalization concerning want-evolution, beyond a few simple laws of association or habit-formation, is extremely difficult.

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[1] See Ch. X, above.

The principle of chief importance is that of *contiguity* or conditioned reflex,— in effect a new name for one of the old laws of association to which so much attention has been given in the previous chapters. The baby's original wants as to food include only responses to the touch of the nipple; while the sight of his mother, or a white bottle, or characteristic sounds, arouse in him no observable reactions. But after experiencing these sights and sounds simultaneously with the feeding sensations a number of times, the sight of an empty bottle, or of any round white thing, will start his feeding responses going. In other words, he has acquired a want for round white objects. Fundamentally that is the way our wants progress.

This example illustrates the common case of want transfer by acquisition of knowledge, the ultimate want remaining constant. The child has ' discovered ' in a crude way that pursuit of round white things leads to satisfaction in feeding. So he goes on, incessantly discovering other technology, other physico-chemical affinities in the natural world about him. So the race has gone on, learning that certain stones can be treated so as to form iron implements whereby their food-getting, combative, manipulative and other impulses could be satisfied. This growth of knowledge (and also of pseudo-knowledge, for learning is fallible, as the utilitarians knew well enough) is of itself constantly changing the demands of the market. People learn that tooth brushes and paste are probably means to avoid toothache, and industries supplying these articles arise. Also the physical environment is constantly offering new problems due to climate, to increase of population and exhaustion of some resources, and to the new methods whereby we live; adaptation to these innovations must be learned.

The Institution of Exchange

From wants for goods and services arises the so-called economic motive, — the desire for wealth. Yet it is not the product of such wants alone, but also of the ' institution ' of exchange, of trucking and bartering. The lower animals have wants for goods, but they have no desire for generalized wealth, because they have not learned to satisfy their wants indirectly by exchange. This institution of exchange, with the resulting division of labor, was undoubtedly of exceedingly slow growth, like the development of language or any of the other fundamental collective habits; but once it exists, the child learns readily that his wants for goods such as candy or clothes are to be satisfied most readily by means of money, and he learns also the means to get money. The case is similar to his learning to talk and to read and write; and so far as the individual's processes are concerned, fundamentally similar to the cat's learning the location of the milk can.

From this point it would be fairly easy to explain genetically why ' avarice ' has been recognized throughout history as a controlling passion. The child has wants for particular things, including the want for power over other people. He is not avaricious for money or generalized wealth. But soon, in any exchanging society, he learns the formula: More bribes to offer, more of my wants satisfied. And so the desire for wealth easily becomes a master motive, though a derived one. Why people are avaricious in varying degrees is another matter; here we are only pointing out why avarice must always, in any form of society where exchange on more than the most limited scale is feasible, be an important clue to human behavior.

In a similar way, the observation that it is human nature to find where one's advantage lies and to seek it, is only a manner of saying that all people have rather similar private wants, and have also considerable learning capacity wherewith to discover how to gratify them.

It would be an interesting but a very difficult matter to seek the instinctive and habitual roots of this trading custom, using the historical and anthropological evidence available. Doubtless little explanation is required for the disposition people so universally show of wanting to reap where they have not sown, — to use the products of another's labor; but the main problem is to explain how *peaceable exchange* grew up. Bücher's account [1] would probably be somewhat modified in the light of more recent evidence, but it is plausible enough that the first exchanges were between tribes as units, even between tribes which were so fearsome or hostile toward one another that they dared not come face to face, but left their wares at a rendezvous, and returned later to gather up the goods which had meanwhile been left by the 'buyer.' A curious inviolability, or immunity to warfare, has invested fairs and markets from very early times; this is one of the large topics of the economic historian. The proximate explanation why the peace was kept and exchange rather than mere robbery was practised, is custom; but whence the custom? We shall consider economic custom in general within a moment, but here be it said that the old utilitarian explanation must again be drawn upon. In the beginnings some people found it to their *advantage* to pay, rather than to rob, since robbery was liable to bring uncomfortable retaliation. It was somewhat as the cat finds it to her advantage to stay off the kitchen table when people are around. But as soon as the 'pioneers' began to enjoin barter on their children, it need never occur to the latter that there was any other possibility. The latter concession may be allowed toward Adam Smith's rejection of the utility explanation. We may, perhaps, make some allowance for the tutelage of instinctive gregariousness and quasi-instinctive sympathy, but in the most primitive society their effects upon exchange are not apt to be great.

TRANSFER OF FINAL WANTS

So far we have been considering mainly the changes in methods of satisfying given fundamental wants, assuming the latter to remain constant. But there is another case of want-mutation, in which what was originally sought as a means (having 'instrumental value,' as the philosophers of value say) becomes sought as an end in itself. This tendency is recognized in common speech as "force (inertia) of habit"; for instance "He's got used to stinginess, and can't change his ways since he became rich." The thing was indifferent or positively disagreeable at first, perhaps, like the use of a spoon or fork to a baby, but after sufficient association with results generally pleasant, one likes it for its own sake.

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[1] Industrial Evolution, Ch. II.

The miser was James Mill's leading example; yet all of us feel a pleasant thrill when we chance to 'make some money.' The good farmer loathes the sight of weeds, and exults at the spectacle of big, dark-green growing corn, even when they are on somebody else's land. And as Veblen says, we admire simply and unaffectedly the polish of a black boot, but abhor the shine on an old coat sleeve. Originally we welcomed or spurned the thing *because* it was a causal step toward something else liked or disliked in itself, but now the something else has dropped out of consciousness or has become secondary.

A similar *übertragung*, or transfer of interest, as we have seen, is a cornerstone of the Freudian psychology, and it is indeed probable that a goodly proportion of all the ultimate desires or aversions of adult life — our tastes, about which there is no disputing — were derived sometime by association from more primitive tastes, which latter have now dropped away. If we remember them at all, as when we are confronted by an old portrait album, it is with astonishment that ever we could have been so foolish.

Such transfer of interest is psychologically a most complex and baffling problem, like the whole of pleasure-pain. We do not know in just what type of cases it is sure to take place. We know that there is a constant succession of interests in everybody, and that one leads to another by repetition of experiences, somewhat as a young man often comes to love the girl whom at first he tolerated only for the sake of her friend in whom he was more interested. It is evident that there is more in this example than mere habit; and even the cultivation of a taste for tobacco or oysters or olives is perhaps more simple and to the point. But in the whole range of such transitions we have the common characters of a smoothing down of irritations which were felt in the learning, a discovery of unsuspected congenital preferences which are appealed to by the new thing, and a wearing to unconsciousness of the original major response (such as the specific pleasures for which money was sought); while the unlocalized aura of pleasant feeling-reactions (partially visceral) which are the anchor of the overt responses such as money-making, remains active, and thus makes the money 'give satisfaction' for its own sake.

These two cases of want-mutation are interlocking. In our efforts to satisfy existing wants, we are constantly, though often unwittingly, acquiring new interests which will demand further means of satisfaction. The railway cheapens haulage and the airplane hastens it, but both open up new demands based on recreative experiences. Similarly arise the moving picture, phonograph, camera, automobile, and innumerable other industries.

INSATIABILITY OF WANTS

Here we are close to the economist's old friend, the principle of 'insatiability of wants.' "The desire of food," as Adam Smith pointed out, "is limited in every man by the narrow capacity of the human stomach," [1] and similarly there seem to be rather narrow natural limits to our needs of other fundamental necessities. Preachers of the simple life have an unassailably logical case; 'poverty' could be ameliorated and perhaps abolished by 'progress' if everyone contented himself with a generous physiological minimum of consumption, *and* kept up his maximum productive efforts on that homely fare. Nothing is more obvious, however, than that the wants of nearly every one of us, even for food, keep constantly ahead of our power to provide.

This apparent insatiability of wants was attributed by Adam Smith to universal human vanity or emulation or effort to imitate the social classes above. "The desire of the conveniences and ornaments of building, dress, equipage, and household furniture seems to have no limit or certain boundary," and in many other connections he intimates that 'bettering one's condition' is a matter of social rivalry more than of brute comforts. The point is elaborated by Veblen and Taussig.[2]

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[1] Wealth of Nations, Bk. I, ch. xi, pt. ii.

[2] Taussig, Inventors and Money-Makers, pp. 99 ff. Veblen, Theory of the Leisure Class.

This quasi-instinctive emulative strain in wants is perfectly clear, and is tremendously important, yet it is easily exaggerated. We learn of the existence and nature of many things by seeing them in the possession of our neighbors, to be sure; but our wanting the things then is not necessarily due mainly to our desire to keep up with the neighbors. Vacuum cleaners, electric washing machines, automobiles, houses with good light and air, are goods which many people are working toward; they are more expensive than the simple life, but they give more convenience and sociability and better health. Good medical care, the most healthful recreation, the broadest education, are all more expensive than the simple life affords, and naturally the wealthier persons get them first, while other people learn of their existence and benefits through these wealthier neighbors. So that wants are likely to expand indefinitely merely from continuous discoveries of more effective ways of satisfying our fundamental needs.

Of course the existence of a taste proves nothing as to its wholesomeness, or whether it was established originally through mere social emulation. The original associations may be good or bad; transfer of interest takes place chiefly on the basis of their frequency. One person ‘ simply and unaffectedly ’ cannot endure a shoe without a French heel and a toothpick toe, while another can endure none but good literature.

The Rôle of Custom

We must now give some further account of the social influences which are perhaps preponderant in determining the detail of our wants. Custom, convention, prestige, fashion, — all are names indicating the power which a group exerts over the choices or acts of its members, through mere social approval, public opinion, or uncompelled deference to superior competence. This is the province of social psychology, which uses the fundamental principles we have been discussing, but which gives special attention to the reactions of individuals to the presence or actions (including the thoughts and opinions) of their fellows.

Economists who have cultivated what passed for social psychology have told us that ‘ the individual ’ is a social product;

that his character, his desires, his capacities, are instilled by the physical and social environment into which he happens to be born. He is not self-contained, with natural and stable wants, but he is constantly shifting his likes and dislikes with the ' social mind ' of his ' crowd,' which is, in turn, strongly influenced by the ' suggestions ' of its leaders. Cooley, B. M. Anderson, and J. M. Clark are among those holding these views.

With some demurring on the score of innate individual capacities (the poet or the athlete is born, not made), which do seem to shape our destinies more than extremists of this school realize, we may say, So far, good. The wants of all of us are greatly influenced by the attitudes of others; but can we go further with the analysis of this influence, toward finding its limits?

Starting with custom, which embraces the more stable institutions, we realize at once that the physiological inertia of habit is an important element. It is the mechanical nature of any habit to become more and more fixed by exercise, so that if the outer situation were simple and unchanging and our original impulses harmonious, we should go on indefinitely in a rut, so long as the responses were serviceable enough to give survival. The habitual response to a given stimulus is always the line of least resistance, and it will infallibly occur unless an equally powerful antagonistic response is simultaneously stimulated, when we have a problem that calls for reasoning or invention. The lower animals are creatures of habit much more than we, because their learning capacity is so far below ours; but we as well as they readily fall into customs because the habitual way is the easiest way.

We should not fail also to connect customs with certain natural cycles and *crises*, such as birth, puberty, death.

EMULATION IN CUSTOM

And of course there are more active factors. Most important undoubtedly is the instinctive(?) desire for approval from our fellows. As Adam Smith and Veblen have brought out, the force of emulation is shown not only in the efforts of leaders to surpass each other, but by the care of the common run of people to keep up to ' decent ' standards of their class, — which are as closely in imitation of the class above them as circumstances allow. It seems to us there is no need of assuming two instincts — both self-assertion and self-abnegation — as McDougall does. One wins the largest possible applause by becoming a leader if he can; if that is impossible, the next best thing is to court approval by falling in with the other sheep in the trail of the lucky leader. Any notice he deigns to give us is treasured and has the precious quality of distinction or prestige.

We have argued at some length above that the thorough-going utilitarian explanation of desire for approval is inadequate, although the favorable regard of our neighbors toward us unquestionably is a goose which lays for us many golden eggs of individual advantage. Apart from other evidence that this propensity is one of the strongest of our original motives, we conclude that the universal conformity to the *mores* or customs in all stages of civilization is out of all proportion to the individual rewards gained or the corporal or supernatural punishment actually invoked.

Many authorities, with Sutherland, believe that the moral customs or ideals spring chiefly from the unselfish parental instincts; and we have seen that in some circumstances this devotional enthusiasm might be transferred by associations to formerly indifferent objects. But common observation of the way children acquire morality, together with the general facts of custom in uncivilized peoples, lead the writer to believe with Adam Smith, that our neighbor, who is removed from our passions and hence takes what is for us a disinterested and unselfish view of our case, and whose approval we instinctively crave, is the pivot of our moral sentiments. The case is only a few degrees removed from that aversion to being thought queer, which makes us conform to some of the most irrational social usages.

In the course of transfers of this enthusiasm we lose consciousness of its origin, and we only know that we are willing to sacrifice our own ' interest ' for the sake of an abstract ' principle.' But in the present writer's view, the motive power of such principles is in the unconscious habit-mechanisms and in the feeling-responses to approval, which have now become mere desire for *praiseworthi-*

ness. Self-respect is the term commonly used to point to our independence of any punitive suasion, and its name also points to the real derivation of this motive from the respect or approval of other people.

In some cases, as in legal, religious, or mere business customs, the punishment for violation is consciously borne in mind, but more important for most people is the ‘ disgrace ’ (disapproval) of being found out and punished, which is even more strongly dreaded. On the other hand, whenever the ‘ sanctions ’ of natural or social or supernatural punishments or restraints are removed, the ordinary egoistic motives are likely to undermine the custom until it becomes "more honored in the breach than in the observance," and then it has no hold. The decay of the ban on Sunday recreations in many communities is an example.

FASHIONS

In that peculiar class of customs which we call fashions or styles or modes, there must be other instinctive factors. Fashions differ from institutions by the rapidity with which they change. The innovations are made by leaders of some sort, — in women's clothing the leaders are said to be from the *demimonde*. The producers of articles of style naturally foster changes by manifold clever methods, and often it seems that they really make the styles. To some extent they do; during the war governments were able to enforce considerable economies of materials by bringing about agreements among manufacturers limiting the numbers of designs. But in normal times bad guesses of ‘ what they will be wearing ’ make one of the ordinary costs of every clothing producer.

It appears that the instincts or quasi-instincts which we have grouped under ‘ curiosity,’ including the pursuit of novelty, make innovations appealing. Habits are easiest to follow, yet they lead to some fatigue and unpleasantness, and so when somebody shows a novel rendering of an old theme, and one which respected personages are sponsoring, we are inclined to adopt it. Once the adoption has gone far enough, the urgency of the social-approval pressure is indicated by the proverb "One might as well be dead as out of style."

Utility and Custom

The obvious fallibility of customs — that they are often more a hindrance than a help to their followers, in the struggle for existence — is apt to blind us to the rational basis underlying them generally. In every case they are the result of some one's inference as to a way of getting what he wanted. The inference may have been quite too hasty, as in the case of a dance to bring rain, or of carrying a rabbit's foot to 'keep away the hoodoo'; but some correlation of events is the unit of all our knowledge and behavior. There is a continuous transition from the unwarranted inference, drawn from chance associations like these, to the scientific law based on the largest possible number of coincidences, from which we get such a 'custom' or collective habit as utilizing electricity.

Custom is, in our view, simply a large branch of the tree of knowledge; subject, therefore, to plenty of infirmities of error, but based on genuine learning and susceptible of steady indefinite improvement. In both knowledge and custom, conventional arbitrary symbols, such as frock coats or alphabets or the Arabic system of numerals, are important; both are fundamentally ways of reacting toward the environment, and both are constantly being tested by their relative success in want-satisfaction. Both are transmitted from generation to generation by imitative learning. Many of our reactions are acquired by individual contact with the physical environment, — reactions, say to the heat of fire, to the ferocity of animals, to the properties of water, etc. In many cases each of us individually makes real inventions or discoveries. But doubtless the larger part of our behavior in detail is imitative; it takes advantage of what other people have invented. The child is coerced or cajoled into imitating his elders as to eating, sleeping, etc., and soon he has a general imitative habit. This copying habit carries over so that finally he automatically looks about to see how some one else is doing it, when he is confronted by a puzzling situation, as in going into a strange cafeteria to eat. The pages of anthropology are full of borrowing between tribes or nations, of such tricks as fire-making, pottery, analine dyes, and so on. The great characteristic of modern civilization is that it embalms discoveries in print, making a cumulative stock of other people's experiences.

But, says the anti-intellectualist, you have confused conscious with unconscious imitation. My interest is in unconscious absorption of customary methods and ideas, which are unreflectingly believed right and true, though in fact they are as apt to be wrong as right. The above discussion of reasoning in Chapter XI, however, has shown that the transition from ' unconscious inference ' to elaborate trains of reasoning (which include the habit "Now I'm thinking awfully hard") is continuous; that the two are fundamentally of the same character. The ultimate test of both is successful dealing with external nature.

Unquestionably every human being absorbs all manner of tricks from his society's culture, like its language, without reasoning why or wherefore, without realizing all their implications, without its occurring to him that other methods might be better suited to the purpose. The learning process in its early stages knows nothing of whys, it is merely a matter of habit-formation by repetitions of simultaneous experiences. One ' believes,' therefore (that is, acts upon), what he is taught, until some discrepancy of experience is serious enough to jar him into questioning. Reflection, criticism, experiment, in place of contented acceptance of fairly successful means of satisfying wants, is a habit which many people never stumble upon.

It must be remembered that the habits of every one of us contain numerous unnecessary kinks which have never been eliminated by isolation of their results. The baby screams and also kicks when he wants his bottle; the bottle comes, apparently in response to both. So he is confirmed in that dual signal, though the yelling alone would be sufficient. Business men commonly believe they are conducting their affairs in the most efficient and profitable manner possible; but experimental methods, varying the circumstances enough to test each step instead of judging by the gross product of all together, give rise to a steady stream of successful innovations. Any scientist is acutely conscious of the difficulty of isolating causes.

Then, of course, there are two other common weaknesses in customs and in knowledge of any kind. First, the situation in which they were originally formed may have changed so that they are obsolete. Henry Adams lamented that his eighteenth-century political traditions unfitted him for the nineteenth-century world of finance. Racial groups of people are constantly going to pieces upon contact with neighbors of a different civilization. Secondly, the custom may have been started by a crafty teacher principally for his own benefit; which case seems to be common among soothsayers and medicine men, but is by no means limited to them. Any animal will use other members of his race, the same as the rest of his environment, as best he can in order to satisfy his own wants. By instinct and by training his own wants may or may not include the welfare of these other members.

Finally let it be noted, though we shall recur to the point again, that a great many of the customs which we unthinkingly adopt are perfectly successful, and perhaps have been elaborately proved so. The workman in mechanical operations often follows instruction charts without knowing anything of the sciences behind them. Hence in no case is uncritical acceptance of a habit, in itself, any positive argument against the validity of what is accepted.

So much for the influence of custom. The gist of the matter is that custom is not, as the historical and institutional economists often give us to understand, a power of darkness opposing the pure rational faculty of man, but is one phase of his rational activities, and, like the rest of knowledge, is constantly undergoing change by rational discoveries or pseudo-discoveries.

Classifications of Wants

A few words may now be said about the natural-conventional and lower-higher classifications of wants. The transitoriness and plasticity which characterize motives (both as to means and ends), must make us avoid the assumption that any adult wants are, in detail, stereotyped by human nature. The instincts and appetites provide seeds, but the growing motives are more responsive to the outer situation than any plants to which we might compare them.

There seems to be a natural priority ranking among original impulses which corresponds roughly to the usual lower-higher division. Some psychologists believe with Sherrington that the pain-avoiding responses are so imperious or ' prepotent ' under stimulation, as usually to inhibit any other responses simultaneously stimulated. Hunger and the parental responses, in their most urgent stages, are probably prepotent over sex, and all these will naturally shut out the social-approval and aimless manipulation responses. These ' lower ' wants must be satisfied in a degree before the ' higher ' can manifest themselves; although it is often pointed out that the poorer classes are apt to stint themselves on nourishing food in order to buy conventional necessities. When one's energy is spent providing the barest subsistence, obviously the wants of culture are not to be developed, and his experience contains more of the unpleasantness of clamoring appetites and pain and obstructed impulses than is the case when he finds it easier to get food and protection. With larger resources at hand, more elaboration can be required in all classes of satisfactions, food, clothing, and shelter included. Comparisons of budgets of families having different incomes show that about the same *proportion* of income is spent on these items as a rule (Engel's law).

But in any case the human animal goes on forming new habits from the day of his birth, so that lower as well as higher wants prescribe immensely different modes of satisfaction among different individuals. One man's meat is another man's — or another tribe's — poison, all depending on differing influences which have developed their habits. And the habitual ('artificial') elements often form systems which are stronger than any lower desires, — as when a man accepts imprisonment for ' principle,' or starves rather than revert to cannibalism. The distinction between natural and conventional wants, therefore, in any grown person is but a shadowy one.

A study of the great class of *esthetic* wants from the psycho-economic point of view would be of considerable interest, but the present writer has not undertaken it. Veblen, of course, has made valuable contributions, but his analysis as a whole seems oversimplified. The study of esthetics, more or less scientific, has been a recognized branch of philosophy since Aristotle; and the English psychologist Marshall twenty years ago attempted to base it upon the psychology of pleasure-pain.[1] His psychology, however, has been in considerable measure superseded. The original tendencies toward manipulation and exploration which are loosely called ' workmanship ' and ' curiosity ' are doubtless important here, as well as instinctive rhythmical vocalization; and quite likely idiosyncrasies of color-preference play a part.

STATIC AND DYNAMIC

The incessant changes in wants, together with the corresponding evolution of knowledge and technology, and the increase of population, are the ' dynamic ' factors in economic processes.

The two series of changes, in wants and in technology, interact; existing wants always exerting pressure on the productive methods, and the alterations in the productive methods, such as the growth of cities, giving rise to still other wants. The process is, as Veblen says, cumulative, as is also true of any other series of events in the natural world. Each stage is a new combination of results for the old incessant forces of nature to work further upon.

The distinction between dynamic or genetic, and static, seems to us however to be overdone in economic literature. It is not a matter of time or of complexity among the phenomena, nor of more or less ' taxonomy,' but simply a matter of more or less abstraction. The classical laws of wages and interest, for example, certainly involve cumulative changes in population, food supply, and so on, taking long periods of time to work out; but they are static, as are most of our laws, in that they abstract certain factors in the situation from the rest of the situation and disregard the ' disturbing ' effects of the latter. Any dynamic or genetic laws we ever get will be abstractions too, disregarding some parts of the crowding flux of reality. There will always be a dynamic residue of forces, however, which have not been reckoned with or reduced to order in our principles. At present the changes in demands are for the most part in this unexplained residue, for the general principle of insatiability of all wants tells nothing about the ways in which particular wants change and the corresponding effects on the whole economic system. We may agree with Veblen and the other institutional economists that theory on this phase of economic processes is neglected and important, but we need not accept their conclusions as to the exact way in which human instincts, customs and other environmental factors have interacted to shape industrial development, — their conclusions obviously being based on a very limited part of the total data required.

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[1] H. R. Marshall, Pain, Pleasure and Æsthetics.

Conscious Control of Wants

There is one more aspect of wants which we must suggest, — the possibility of conscious control of them for ulterior ends.

We are all familiar with this process in advertising and other forms of salesmanship or persuasion. ' Selling an idea ' is the contemporary slang equivalent for the Sophists' art. Many books are being written on the psychology of advertising, emphasizing the ancient device of appealing to the audience's emotions, and taking some account of the canons of good taste esthetically. The effectiveness of mere reiteration is a modern discovery by business men. No one could have predicted *a priori* that simply the display of "Uneeda Biscuit" or countless bill-boards and printed pages would materially affect the sales of that commodity, but now everyone knows that consumers are predisposed toward a product that is kept before their eyes, apart from the real advantages of trade-marked goods as to uniform quality.

The psychologists of advertising all insist that the argumentative type of appeal has a different applicability from the suggestive, emotional or esthetic, ' short-circuit ' type. All persuasion is, however, essentially argumentative or inferential. The difference between the picture of a pretty girl holding a bar of soap, and the page of closely-printed paragraphs, is simply one of degree. In either case, as we need not be told, there is the possibility of too hasty and unwarranted inference, as when a merchant proclaims that he is "just out of the high rent district," and therefore sells for less. The simpler type would not commonly be called a logical process, but like the other, it tries to point out to the customer that this object has the earmarks (cheapness, beauty or other suitability) of a class of objects toward which he is in the habit of reacting positively. In somewhat similar fashion there is pointed out to the mouse the earmark of cheese in our trap, while the other circumstances of the case are not emphasized to him. This simple physiology of habit (association) is all we mean by hasty inference.

The fallibility of salesmanship as a process of want-satisfaction, it should be said, is not wholly a matter of 'honesty' or 'dishonesty' in the vendor's statements. All he says may be true, and yet the customer may be misled as to the object's suitability for his needs.

We cannot attempt here to go extensively into the applications of psychology to advertising. Incidentally it may be remarked, however, that most of the current books are founded on McDougall's psychology, and consequently their fundamentals leave much to be desired, from our point of view, regarding the instincts and their relations to reason.

Control of Wants for Public Ends

With the understanding of mental processes which will now become increasingly available, conscious control over wants may be more effectively undertaken for public or altruistic ends. This enterprise is very old; not only prophets and statesmen, but untold generations of parents have labored with much success to instill better characters into their children. It is traditionally the task of the moralist to call people from the pursuit of follies to a striving toward (what he considers) better ideals; and an economist-moralist has especial competence for suggesting changes in material demands which would lead to a fuller general satisfaction of wants. The classical demonstrations of the advantage of saving over spendthrift consumption, and of the need of moral restraint on the laboring population, are clear cases of this kind. Lately, the patent fact that numerous private and public agencies are constantly swaying consumers' wants, and that such influencing is often publicly harmful though privately profitable, has led to the beginning of a "Theory of Economic Guidance," by a keen

American economist of the younger generation.[1] In his analysis it is proposed to show the guidance of economic choices by the individual himself, and by commercial, coöperative and public agencies, — including the unconscious influences.

Quite as a matter of course, the ' selling ' methods which have been developed in business are being adapted to public purposes, and often effectively. Advertisers and artists in all countries were mobilized to produce posters, badges, leaflets, banners, lantern slides, etc., to fight the Great War, and recruiting, loans, and food conservation all were thus aided. Similar devices are often used for charitable or religious agencies, such as the Interchurch World Movement, the Y. M. C. A., and educational campaigns. These naturally are not always so successful as the war propaganda, for they may not have ' goods ' which are intrinsically so desirable to ' sell '; and the ' selling ' methods may moreover be bunglesome. But gradually we may expect to see all the new effective arts of persuasion utilized for altruistic purposes, — including frequently even the less scrupulously honest arts. Standards of taste may soon be ' sold,' many people hope, on a wide enough scale to restrict considerably some selling devices, notably the bill-board.

Our distinction between wants for goods as means, and wants for goods that are ends in themselves, is useful either in evaluating the social effects of private salesmanship or in planning guidance directly for public benefit. Obviously a large part of salesmanship is concerned with conveying knowledge to people as to how and where they can get what they want. But much of the so-called influencing of wants, is simple deception, as to means toward ends about which there is no dispute. People want, say, a cure for tuberculosis, or durable, fast-colored cloth; and the vendor falsely, even if unwittingly, persuades them that his goods are up to their specifications. The only remedy for this situation is the old-fashioned one of more education, more scientific discovery of causes. The government can doubtless be expected to enlarge its sphere of compulsory market standards, but this again is dependent on a general increase of knowledge.

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[1] J. M. Clark, "Economics and Modern Psychology," Jour. Pol. Econ., 26: 136–166 (1918).

But there is also a large field for genuine transformation of tastes, which includes the development of latent tastes. The producer tries to get people to like his Coca Cola better than other things they might buy, or to want to shave every day, — by means of his safety razor.[1] This transfer of interest must be accomplished by grafting upon existing interests, as we have explained, and by repetition of the appeal in various guises.

The moralist, from whatever quarter he may come, who is concerned with getting the public to want the right things, has therefore these same two methods of attack. He may try to *enlighten* them by explaining how they are defeating some of their strongest ultimate purposes (or even trivial purposes), such as their personal health, their curiosity about the world, the welfare of their loved ones or country, or their mere wish for pure food, by behavior which is ill-adapted to these ends, — that is, by their wasteful living or because they will buy that rascal Jones' bread. If, on the other hand, he finds them getting exactly what they want — whiskey, for example — but that their ultimate wants are in his view depraved, he can try the grafting, repetition and curiosity process, of instilling new final purposes.

Such a moralist is likely to become impatient at the tedium and uncertainty of either method, and to long for forcible repression of the offending desires. Drastic measures undoubtedly have their place, as has whipping or its equivalent in the rearing of children. Prohibition of intoxicants, if enforced a generation or two, will probably wean us away from any conscious want for alcohol; and innumerable other reforms of motives are possible if the environment be wisely ordered. But forcible training of this kind, even if wise, is hardly feasible without the support of a goodly majority of the people, and so there will always remain plenty of reforms in wants to be accomplished by persuasive and educative methods.

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[1] A. W. Shaw, in "Some Problems of Market Distribution," pp. 41 ff., distinguishes between "conscious needs" and "unformulated needs," the latter being brought to consciousness by discovery of a new product, such as the safety razor.

CHAPTER XVI

UTILITY AND COST

THE dual usage of *value* of which Adam Smith spoke — value in use and value in exchange — remains a plague to us, accentuated by the ambiguity of the German *Werth*, which had to be employed by so many value theorists on the Continent. Some economists, who have given special attention to the philosophical General Theory of Value as well as to the Continental economists, insist that value is an absolute, not a relative term, — that it is a quantity of 'motivating power,' of either the economic, esthetic, moral, nutritive, or other variety. The term *utility*, however, is well established in English economic writing for the simple quality of 'being wanted by some subject,' whereas *value* in whatever usage, implies some sort of comparison or measuring or relation, among wants.[1] Ours, therefore, will be the traditional usage as found, for example, in Marshall; and this chapter will be devoted to exploration of the psychological background of utility.

OBJECTIVE AND SUBJECTIVE ASPECTS

The first step necessary is to correlate as well as may be, the objective and subjective aspects of utility. In accordance with our previous discussions, we consider the objective account fundamental: a thing has utility whenever it is wanted, and it is wanted whenever a human being is so constructed as to respond positively (in a seeking way) toward it whenever it (directly or mediately) stimulates him. Contrariwise, a thing has *disutility* when the subject's response is one of repulsion, i. e., is negative. This centering of attention on the *behavior* of the subject with reference to the object is characteristic of economists' practice, though not of their writings on utility.[1] It is what Böhm-Bawerk and Wicksteed call the 'fact of choice,' though more accurately it is a fact of attitude, for we should say that *choice* occurs only when two or more responses are opposed.

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[1] "Wantability," as Fisher suggests, would undoubtedly better convey the economist's meaning to the layman, if it were ever established, than utility or desirability, because of the ethical entanglements of the latter two.

But are we to disinherit, then, the subjective facts of utility, which have bulked so large in all discussions of value? There is no occasion to do so, so long as they are taken only for what they are worth. With each act and want, there is usually a corresponding consciousness, or complex of sensation and images, and frequently this phase alone is observed.[2] And further, the final usance of any commodity or service is ordinarily attended by a feeling which we call pleasant (or relief from more unpleasant); which feeling has been herein ascribed, in the main, to obscure instinctive reactions. These feeling-reponses are also reflexly aroused whenever the main want rises imaginally to consciousness (as when one 'imagines' himself eating an apple).

There has been good reason, therefore, for the economist's conception of utility as a wholly subjective affair, pretty well synonymous with pleasure; as well as ground for the allegation that a single utility can never be absolutely measured, since pleasures in different minds, or even in the same mind at different times, cannot be accurately compared; and for the theory of the hedonic calculus. These propositions are based primarily on introspection; but consciousness does indeed mirror the behavior-series with sufficient accuracy so that the theory of an individual calculus of utilities has been immensely serviceable toward explaining the facts of value.

But many disputes over the verisimilitude of this theory are cleared up if we always interpret utility in objective terms, because the physiological series alone is complete. As soon as a response or want has been exercised a number of times, with results satisfactory on the whole, it becomes a habit involving a minimum of calculation, like a man's buying cigarettes, — it may even become unconscious, or 'subconscious,' as the Freudians say.

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[1] Fisher took a similar stand in his Mathematical Investigations in the theory of Value and Prices (1892), p. 5, though many of his later value-transactions are carried out in the subjective realm.

[2] See Ch. VII, above.

And it is perfectly clear that the aura of feeling originally connected with many a want wears away until one feels no pleasure in what he is impelled to do. What he *does* is effective in the market; whether or not he ' knows what he is doing ' or ' likes to do it.' It is physiological forces which determine his acts, not amounts of pleasure or pain anticipated, — though in most cases these are only two ways of saying the same thing.

The riddles connected with the measurement of a single utility can also be solved, apparently, by the objective conception. The strength of any *one* response can be tested by measuring in terms of foot-pounds on a draw-bar, or calories of heat given off, the amount of energy the subject exerts when this response is fully stimulated. Labor is thus the original yard stick of utility, as well as the original purchase price of all things; and it is probably not true that we are forever limited in our judgments of utility to observations of choice between *two or more* utilities.

The comparative methods, however, are still available and practically are easier to apply. When a situation calling for choice arises, anyone can observe which response was stronger, — say to keep a dollar, or to gain admission to a ball game. The fine gradations of money enable our wants to register their strength fairly accurately. If we want to compare utilities between persons, however, through either the money or the labor standard, we must compare the *proportion* which each will give of his total stock to get the given object, since obviously the richer will spend a dollar for a more trivial want than will the poorer. Individual differences in sensibility or taste will express themselves, we believe, in the fractions which each person will give up of his *total* stock, and so they need not be reckoned as sources of error. In other words, the utility of $100 to a man owning $1000 is about the same as the utility of $1000 to a man owning $10,000.

These suggestions of course do not go very far into this subtle question, but the important thing is that when we think of utility in terms of response-mechanisms, such problems may be attacked with the rulers, compasses and scales that are common to all scientific students, which measurements cannot possibly be applied to utility in the 'mind,' open to one person only, that is seen clear or dim according to the time of day or what the subject has just had to eat. When there is no other evidence, we can use the subjective report to infer what the objective situation is, somewhat as physicists have to use appearances to infer what is happening within the intangible but consistent springs of their phenomena. As psychology progresses, we shall know more and more accurately what to infer, in objective terms, from our sensations, thoughts and feelings; but we know already that an individual's mental experience is too vague and incomplete to give anyone a true view of the whole causal sequence. Whatever error the hedonic calculus may contain, by reason of instincts and blind habits which are not fully mirrored in consciousness, we shall avoid by attending closely to the behavior.

' Satisfaction ' or ' gratification ' also are statable objectively. Whenever we observe a response, we know that that want was in some degree satisfied, and if the subject is thereupon indifferent to a repetition of the stimulus we can say the want was completely satisfied, — for the time being.

Diminishing Utility

But often, as everyone knows, a single stimulation does not completely ' satisfy ' the want. When one is hungry he keeps on eating for some time, if food continues to be available, instead of going off to do something else. Listening to a single phonograph record, or making a single throw of dice, are crude examples of experiences which are usually not sufficiently satisfying to cause the response to lose its prepotency.

And the response gradually becomes weaker, as Jevons and Menger make clear, if the identical stimulus is repeated. The first record, or the first loaf of bread, at a given time, is ' worth ' a good deal to the subject; its utility is high; he will respond quite energetically to it. These are various ways of saying the same thing. But as a second, third and so on, loaf or record is offered him, he will do less and less to possess them. The rapidity with which his response will reach zero varies, of course, with the commodity and with the physiological state of the subject, but presumably a normal curve could be established for each commodity with reference to a social class, with sufficient experimentation. Such is the broad principle of diminishing utility, which has meant so much for the theory of value.

The illustrations from common experience are necessarily crude and inexact. We know that in many cases the ' appetite ' for phonograph music or for whatever satisfaction is under consideration, is heightened by the first few repetitions; we know that over a stretch of time tastes are altered so that one will enjoy much more of a commodity than he did at first. This is because in common experience we are dealing each time with a community or complex of responses, whose members are shifting during the experiment. As one settles himself to listen to music, dormant responses are aroused, and distracting impulses subside, so that his total inclination toward the music is presently stronger than it was at first. But if we could dissect out one of the constituent responses and watch it in isolation, we should find its energy diminishing from the beginning, if the stimulus remained constant.

That is the Weber-Fechner law of psychology. It is usually stated from the standpoint of equal increments of sensation (just perceptible differences), in which case the objective stimulus is said to increase at some geometric rate in order to give the simple arithmetic increase in sensation. For example, if the subject could just distinguish the weight of one ounce on the skin from two ounces, he could probably not discriminate between two ounces and three ounces; it would require something over three, perhaps four, to make a perceptible difference. This proposition can be put into the form familiar to economists by saying that there is diminishing sensibility per ounce of stimulus. The fundamental cause of the phenomenon is presumably fatigue of the response-mechanism or adaptation in the sense-organ.[1]

The connection between diminishing utility and the Weber-Fechner law has often been affirmed and denied by authorities of some competence, ever since the principle of diminishing utility was introduced into economics. The Weber-Fechner law refers to sensations; has it anything to do with likes and dislikes? One of the most recent pronouncements by an eminent psychological authority is that of Titchener:

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[1] For a recent experimental study and biochemical hypothesis of this ' fatigue,' see the article by Selig Hecht above referred to, "Photic Sensitivity of Ciona Intestinalis," Jour. Gen. Physiol., 1: 147–166 (1918).

> There is some little evidence that affection, on its intensive side, obeys Weber's Law. . . . At any rate, it is true as a general rule that what gives us pleasure or displeasure is roughly proportional to our income, our age and status, our ambition, our standard of comfort. If I am starting a library with a hundred volumes, and a single book is given me, I am as pleased — other things being equal — as I should be by the addition of ten volumes to a library of a thousand. . . . All these things sadly need experimental confirmation; but there seems no reason why affective intensity should not, and there seems to be some evidence that in fact it does, follow the same law as the intensity of sensation.[1]

It is evident from his illustrations, however, that the psychologist's knowledge on the point is about as inexact as the economist's.

The difficulties in putting the two principles together have been mainly two: the irregular operation of diminishing utility in crude economic examples, and the gap which psychologists have usually drawn between affection (pleasure-pain) and sensation. The first stumbling block, of the irregularity of the diminution, we tried to account for a moment ago, by the undoubted shiftings which are constantly taking place among the constituent-reflexes of any gross response. The second difficulty is removed for us by our conception that the diffuse and unlocalized consciousness called affection is merely the sensation-correlates of instinctive inner bodily reactions. In other words, we believe ' feelings ' of liking and disliking are composed wholly of sensations, and so *of course* are subject to Weber's Law. So long as fresh, recuperated positive reflexes continue to be drawn into the activity, the general zest of enjoyment is kept up or increased, but that is a matter of successive enjoyments, not the repetition of an identical stimulus.[2]

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[1] Textbook of Psychology, pp. 259–260 (printing of 1915).

[2] See above, Ch. X, for development of our view of pleasure-pain. It does not differ much from Titchener's, who says he considers affections "as mental processes of the same general kind as sensations, and as mental processes that might, in more favorable circumstances, have developed into sensations." He "hazards the guess that the peripheral organs of affection are the free afferent nerve-endings." *Ibid.*, pp. 260, 261.

Disutility and Cost

What now of *dis*utility, or experiences which are repugnant, yet are submitted to for the sake of a more than counterbalancing utility? Much of our labor — that is to say, the efforts we put forth to satisfy our wants — evidently has this disagreeable quality; and the restraint we put on urgent present desires, as in saving our money, is often markedly unpleasant. This negative side of the hedonic calculus would seem to make our behaviorist project impractical. If we see a man digging a ditch for five dollars, how do we know without asking his report on his consciousness, whether the experience is wholly agreeable, or if the pleasures to be secured by the five dollars are only just sufficient to overcome the repulsion of the task?

True, the digger's introspection would be the quickest way to get a line on the situation, although clearly he would be unable to give a wholly accurate report as to how much surplus of utility he was securing. But we could soon make some progress by objective methods, if we removed the five dollars from the situation, and observed whether he continued to dig. We have here a complex of reactions, stimulated at once, whose tendencies are in opposite directions. The bitter must be taken with the sweet, or the sweet not at all, and the stronger reaction prevails, — it may be either toward acceptance or rejection of the complex object offered. Psychologists frequently experiment by offering varying doses of reward and of punishment, distraction or irritation inseparably, and they can conclude more accurately than can the subject, how much more willing he is than unwilling in any given combination.

The mechanics of the matter are, of course, quite intricate and in large part unknown, but we can be reasonably confident that whenever the subject feels his task to be irksome, yet that he must stick to it because it gets him something he wants (enough to overcome the repugnance), his total energy is divided between doing the job and trying to run away from it. When the task is wholly pleasant there is no such division.

When the situation is wholly unpleasant, if there are no unconscious habits impelling him to accept it, then he is wholeheartedly avoiding it.

The difference between utility and disutility, therefore, is not between a psychic impression and the energy put forth to realize it, for no psychic impression, either pleasant or unpleasant, can occur except by means of a response which involves release of energy. There are simply positive responses, called pleasant, and negative responses, called unpleasant. The difference is in direction of the agent's efforts, whether he is seeking or tolerating the stimulus, or is avoiding, repulsing it. When both are operating simultaneously, the gross result will not indicate the strength of each, as total profits of a business does not reveal which departments are profitable and which unprofitable, but the elements are nevertheless statable in objective terms and verifiable by objective experiments.

As a result of this consideration of disutility, we must amplify our definition of want, to conform to common usage by economists. A want is, — not merely a response-mechanism, but a response in the positive direction, which may mean efforts to escape from, or to avoid, an unpleasant situation by going perhaps into one which is only less unpleasant.

ULTIMATE COST

The ultimate nature of *cost* is now seen to be definable in either one of two ways, which have been confused as one. "Efforts and sacrifices" are usually considered the real costs of production, whether in work or in saving. But sacrifice, if it means pain or unpleasantness, is merely one kind of 'effort' or response; wholly pleasurable responses also involve effort, in the sense of depletion of energy. Some writers again, such as Green and Davenport, emphasize 'opportunity-cost' (to the individual, though not of production as a whole), which is no positive pain but only the foregoing of one specific pleasure in order to accept another one.[1] A recent discussion asserts (apparently following out Wicksteed's line of thought) that cost is always ultimately the most urgent excluded desire.[1]

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[1] D. I. Green, "Pain-Cost and Opportunity-Cost," Quar. Jour. Econ. 8: 218–229 (1893).

There are, therefore, three possible situations as to cost, depending on the feeling-reactions of the subject, and no one definition of cost will be adequate to all.

1. The activity of production may be felt as wholly unpleasant; that is, the avoiding responses aroused would immediately put a stop to it if there were not the pull of anticipatory responses connected with the reward.

2. The work undertaken may be rather pleasant in itself, regardless of the reward, but some other activity would be more attractive if the reward had not been attached to the first. Really these two situations differ only in degree, for there is always something else we prefer to do when what we are doing is irksome; and no matter how pleasant our task may be, we cannot recall that other, more agreeable experience, foregone without a pang. So that opportunity- and pain-cost merge together; both refer to counter-responses which must be overcome by reward if the costly work is to be undertaken. In both cases, by objective experiments the subject's attitudes can be discovered and the mystery of his mind, his ' feeling,' is not essential.

3. The work is the thing the subject prefers to do, regardless of reward, hence there is no pain-cost. Some home-gardening and many other profitable recreations are of this nature. Although ' labor,' in the form of exertion, is the price or rather the correlate of all utility, yet labor is not always irksome. Ultimate cost is properly — and usually — connected with counter-responses pulling against the costly activity, and these counter-responses are partly pleasant (seeking something else), partly unpleasant (merely toward avoiding this experience). We can call these respectively opportunity- and pain-costs, remembering that probably every instance of costly production combines the two.

Psychic Income

The term ' psychic income,' popularized among economists by Fetter and Fisher, may now be noticed. Psychic income is applied to wholly subjective entities, — "Desirable results produced in the realm of feeling," according to Fetter;[1] "Sensations, thoughts, feelings, volitions, and all psychical events," according to Fisher.[2] The latter distinguishes these subjective results from "enjoyable objective services," as of nourishment, housing and warming, and says:

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[1] M. Roche-Agussol, La Psychologie Economique chez les Anglo-Americains (Montpellier, 1918).

> It is usually recognized by economists that we must not stop at the stage of this objective income. There is one more step before the process is complete. Indeed, no objective services are of significance to man except as they are preparatory to subjective satisfactions.[3]

Our objections to this concentration on the subjective aspect have been sufficiently set forth. We agree with critics of the 'psychic accounting' economists that their scheme is essentially the hedonic calculus of Bentham, though we consider this fact much less damaging to either party than do the critics. The question of the reality of refined psychic bookkeeping in the individual mind, we shall deal with in the following chapter on the valuation process.

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[1] Economic Principles, p. 27.

[2] Nature of Capital and Income, p. 166.

[3] *Ibid.*, p. 165. Cf. Fetter, Principles (1904), Ch. VI.

CHAPTER XVII

PSYCHOLOGY OF THE VALUATION PROCESS

'VALUATION' is here used to denote the process of balancing utilities against one another, leading to the judgment that A is wanted so many times as much as B. 'Choice' we use in the narrower sense of mere preference, and hence signifying not 'how many times,' but 'A is preferred to B.' 'Utility' should perhaps always be used in the final sense, in which case it is the ultimate consumer who is debating; but there would be some point in speaking of 'derived utility' — the want of a merchant, derived from the ultimate wants of the consumer — as behind the merchant's money *demand*. Our problem is to translate the economist's concept of valuation into modern psychological terms.

Values depend upon individual acts, choices and valuations. But by no means all economic *acts* can accurately be called choices, for some are not the results of calculation. There is much economic behavior, from taking the trolley car to laying a brick wall, which flows from habitual responses that are unopposed and direct, like the animal's response to food. A Benthamite might argue at length that it is a choice between doing and not doing, etc., but our point is that such usage would fail to discriminate the important situation which arises when there are two or more opposing responses stimulated at the same time. The subject's 'mind,' that is, his stream of images, reflects subjectively the battle going on in his nerve-circuits. It is, as usual, the latter aspect of this process of calculation which we shall try to survey, although unconscious calculation (of which we get a hint in our dreams) is presumably a much less important economic factor than are the unconscious direct, unopposed, habitual responses.

We have indicated our conception of the mechanism of choice in connection with our discussion of the will, and of McDougall's idea of 'reasonableness.'[1] It is parallel to reasoning. An ambiguous situation arouses antagonistic, or to some extent mutually exclusive, motives. Overt action is inhibited while the various responses successively predominate on the imaginative behavior-level, and thus explore the ' consequences ' of each possible choice so far as they are ' foreseen ' by the agent.

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[1] See above, Ch. XII.

This foreseeing, of course, depends wholly on whatever associations the subject has from his own past, and so he makes perhaps the most egregious blunders as to what the actual consequences of any choice would be. Pavlov's dog, after training, ' foresees ' that he will soon be chewing food when the red light appears, but he may have completely misjudged the experimenter's intention. But the imaginal consequences or effects, in their turn, are stimuli which arouse other motives of the subject, which at the beginning were not seen to be involved. When these are aroused (to the low tension of images), they lend their strength to the response which has in a way ' promised ' to gratify them. Their strength means here, not voting power, but energy toward moving the body in a certain way.

Since most motives have some hedonic feeling correlated with them, the process of reflection is in considerable measure a calculus of pleasures and pains. The responses correlated with pleasant feeling mostly urge our body one way; those of unpleasantness in another. But this parallelism, as we have seen, is not complete. Some unpleasant motives like our ' sense of grim duty ' are physiologically effective in driving us in the line of greatest resistance, according to the subjective view, and so the hedonic calculation does not exhaust the situation. Only a full observation of the facts of behavior, including minute processes within the body, would reveal the whole story of our every-day choices or valuations.

When we come to the market place, we find dealers absorbed in calculations which are reasoning, discovery, invention, rather than choosing among utilities. Their desire to make the largest profit possible, within the rules of the game, is fairly constant; the problem is *how* to make it. Their calculations take into account, not merely all manner of purely physical facts, like rains in the cotton-belt, but also numerous facts of consumers' desires, so far as the dealers can discover them. Philosophically it can be said that the dealers respond to psychical facts, to consumers' future choices, but proximately they are responding to black marks on paper and sounds of voices, from which they infer the future trends, like the dog drawing crude 'inferences' as to future eating delights from the red light stimulus. Dealers in the market respond generally to the broad, habitual experience that a larger supply can be sold only at a lower price per unit than can a small supply.[1]

Utility Curves and Demand Curves

We shall return to the subject of calculation presently, but let us now carry forward the connection of utility with exchange value.

The protest that demand does not run wholly parallel to utility, because the rich man's offer of a dollar does not represent the same utility as the poor man's offer of a dollar, and that it is therefore misleading to speak of exchange value ever being determined chiefly by utility ("one side of the scissors doing the cutting," or of production being directed by *utility*, as distinguished from *demand*) has been frequently made, and so far as it goes it can hardly be questioned. One might still argue that the rich man's demand may be more important to society as a whole, because his contribution to production is perhaps greater than the poor man's, but either proposition seems sufficiently obvious so that we will take both for granted.

But supposing incomes equal, to what extent is the declining composite demand-curve dependent upon declining individual utility-curves of the same general shape? Expositions of value usually treat the aggregate demand curve as the summation, in monetary terms, of the utility curves of consumers, and ascribe declining demand chiefly to diminishing utility. In our opinion, too much credit is thus given to the diminishing utility principle in its simplest form, and not enough to the technical facts of different uses of any commodity. The declining price-offer per unit of an increasing supply of potatoes or candy, as well as of steel ingots, seems to us to be due rather to the less urgent uses to which further units of a stock can be put (including speculative uses in the future, which play so large a part in the actual elasticity of any market with reference to price and supply), than to gradual saturation of any one class of consumers' wants, which is what diminishing utility is usually thought to refer to. Of course the less urgent wants are gradually satiable also, at a given time, so that diminishing utility operates throughout the whole range, but that there are several wants of different urgency, any of which can be satisfied by the same commodity, is a tremendously important factor in demand, which in an exact analysis should not be lumped together as ' diminishing utility.'

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[1] For important qualifications of this proposition, see G. B. Dibblee, Laws of Supply and Demand (1912), Taussig, "Is Market Price Determinate?" Quar. Jour. Econ., May, 1921. Dibblee gives an interesting and suggestive and somewhat heterodox discussion of psychological factors in supply and demand based on subjective subtleties, with much appeal, however, to business events, somewhat in the manner of Wicksteed.

It should be remembered also that these ' less urgent uses ' are sharply divided into final uses and productive uses. A less urgent final use for water, say, is for bathing; while a less urgent use for steel is in a machine-part where cheaper iron will do nearly as well. Practically all production goods show this ' diminishing productivity ' in a series of different uses, and this hierarchy of uses of producers' goods, as well as the two diminutions of utility above-mentioned of the consumption-goods into which they finally pass, plays its part in determining the shape of the demand curve.

Another criticism to be made against the usual treatment of utility by the mathematical or ' psychological ' schools, relates to the method of infinitesimal increments. These writers often apply mathematical formulae to various problems in utility in such a way that many readers believe the writers assume that any individual man does in fact make indefinitely minute calculations. Ridicule of such an assumption is of course the easiest possible task, and this misconception of the mathematical economists' work is in considerable degree responsible for all the controversies over the hedonic calculus.

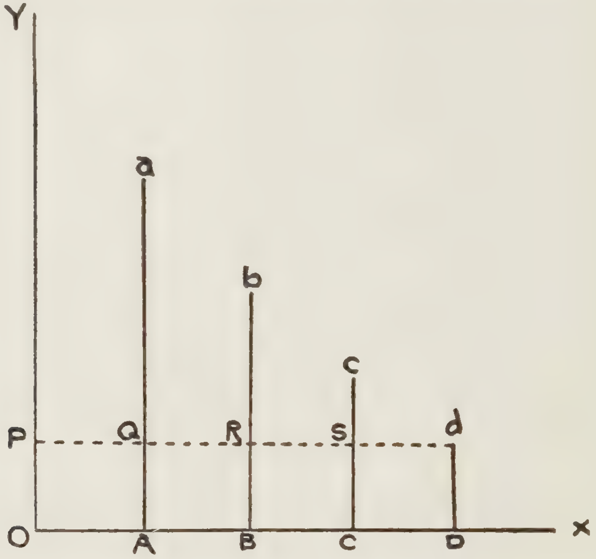
Yet economists have long said that wants are for concrete goods, such as motor cars, and not for miscroscopic units of pleasure, while Jevons pointed out the highly significant proposition that the actions of large numbers of people show a regularity which individual acts do not exemplify. This *inertia* of large groups of mortal behavior-facts has always been the basis of mathematical calculations on mortality, suicide and other vital phenomena, by statisticians; and it is likewise fundamental to mathematical economics, as Marshall and Pigou well know.

To accuse mathematical economists of assuming an impossible man is just as reasonable as to accuse a vital statistician of supposing that any inhabitant who moves from the First Ward to the Second Ward will live just 1.253 years longer by reason of his change. *Aggregate* market demands, like aggregate mortality, accidents, and almost any other vital quantities, vary by indefinitely small amounts with changes in controlling factors like price or fashion or bacterial content of the water supply. And so demand-curves are continuous and may be investigated by the most elaborate calculus, with the certainty that those folks who will pay forty cents as readily as twenty cents a pound for sugar, and other similar irregularities, will be offset by other ' errors ' in the opposite direction. Any natural science depends on exactly the same procedure. But *individual* utility curves are not amenable to such handling; our straight perpendicular lines of considerably differing lengths express more accurately the situation there. If a few simple analogies were thus employed, and ' utility ' used more carefully, mathematical economics would be better appreciated.

Substitution; Consumer's Surplus

There are two kinds of substitution relevant to value. A good may satisfy any of two or more wants, or one want may be satisfied by each of several goods. Whichever of the three causes mentioned above operates to make utility diminish, if several units of any good are available (say pounds of potatoes), the subject need not give more for any unit than he finds it necessary to give in order to satisfy his least urgent want among the wants that can be satisfied with the units available, or at the price ruling. This want is the marginal utility (Dd in the diagram), with which conception the reader is assumed to be familiar. The possibility of substitution is necessary, it is seen, as well as the principle of diminishing utility, in order that marginal utility may determine value, for if one must take or leave all the units, his action is ruled by total utility, — by all the uses that can be made of the stock.

Now since he pays for each unit according to his marginal utility, there is said to be a consumer's surplus or rent, consisting of the gross amount by which all the prior utilities exceed the marginal. In the diagram, it is the sum of Qa, Rb and Sc. The utilities and fractions thereof are commensurable absolutely, we believe, in terms of fractions of his total energy which the subject is prepared to expend in each case; but more practically they are measured by the diminishing sums of money which he will give for the successive units of the good.



An important question is, what does our psychology say as to the reality of consumers' surplus? Or rather, is it as accurately expressible as the diagrams represent, or may we only say that in many cases one feels vaguely that he has 'got more than his money's worth'?

Properly understood, we believe the diagrams tell a true story. It is obvious, of course, that if you add up the total utility of all the things which anybody purchases, the sum will far exceed his total purchasing power, because what he ' saves ' of the amount he would be willing to pay for the first articles he buys, he can use toward purchase of the next articles. His total available energy remains constant, and the mental correlates (sensations and images) are about constant in quantity too. A series of good bargains will, however, take the agent out of a pain economy into a pleasure economy; that is, his activities become on the whole more pleasant, because he is able to avoid the extremes of misery which privation of economic goods may mean. This calculation, to be sure, is static; his wants are constantly changing and may put him back into a pain economy again, as he becomes discontented with the life which he formerly thought would be so satisfying. A want based on prestige, as most wants for diamonds, would probably disappear entirely, if the good got very cheap, and then of course any possibility of consumer's surplus would be gone. But at any one time the utilities we represent by our lines are grounded in solid physiological mechanisms. Our subject can be counted on to exert himself to the full amount of Aa for one pound of potatoes, *if necessary*; and if he gets it for AQ he has saved Qa in energy for something else, although he may never think about this saving.

As in so many other instances, the conscious report of consumer's surplus is incomplete. To ascertain this surplus exactly it is necessary to know how much the agent would pay (do) for a given unit *if he had to, in order to get it*. But we rarely ask ourselves that question; we are accustomed to buying matches at a penny a box, bread at a dime a loaf, water at four dollars a year, and seldom ' realize ' that we are getting an enormous surplus in utility on them. But the responses indicated by our diagrams are there, just the same, ready to deliver certain proportions of our resources any time the situation calls for extreme payments, and so the surpluses might be called ' implicit.' [1]

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[1] Dibblee argues that demand-curves are incalculable, because the subject cannot foretell what he will give until the situation arises, — for example for a major operation for his child. This is true in the subjective realm, but the power that will be exerted in the test is already latent in his bodily structures, like the steam and mechanisms of an engine. It is these existent but latent responses which utility and demand-curves refer to.

DIFFERENCES IN THE ACCURACY OF CALCULATIONS

As we have reiterated in many connections, there is no *a priori* rule as to the accuracy of any individual's calculations. None can be completely accurate, for nobody knows *all* the consequences which will follow from any of his acts. Each of us is liable to be deceived as to the durability or stylishness of the clothes we buy. If any theorems of the accepted economic principles are dependent on the assumption of human infallibility in inferring the ultimate consumption utilities from concrete goods (as Veblen and his sympathizers appear to believe), of course those theorems are doomed. This school of critics further insinuate that if people get enjoyments which are based on false suppositions, our assumption of human 'rationality' breaks down doubly. The consumer of a certain medicine, for example, believes himself benefited by it, but physiological research may some day prove that the stuff really harmed him. That consumer, Veblen would say, is not getting a real satisfaction, and he is a living protest against the hollowness of economic theory.

Economics would indeed be in a bad way if it refused to deal with any want until it had explored all the 'implications' of the want and found them scientifically justified. The 'rationality' which we do assume is merely some ability to learn connections between present goods or situations (such as land, iron ore, oil wells, teddy bears), and future final utilities, which faculty everyone (especially the associationists) has always known to be lamentably imperfect. That economist who is supposed to assume an infallibly calculating subject, is merely a man of straw.

At the same time it is true that many of the propositions of economics, particularly those optimistic ones as to relative profits depending on proportionate services rendered, if put into absolute form must have the proviso "This is what would happen if people knew enough." That is the 'economic man'; an abstraction from reality but no more discreditable to the economist than the spherical earth is to the geographer.

We have not gone into the psychology of individual differences even so far as it is now attainable, but as knowledge of this subject develops it will be highly useful to economic theory in reference to human ability to reason from ends to means, and *vice versa*. Our investigation did, nevertheless, disclose some particulars with which accuracy of calculation varies between individuals.

Most obvious is simple differences in knowledge, which differences are due partly to variations in innate learning capacity, and partly to discrepancies in opportunity. How many "mute inglorious Miltons" are smothered by lack of opportunities is a large question on which research is going forward in many directions, but there can be little question that the most brilliant genius would not learn a great deal of the world about him without the facilities of subsistence and interchange of experiences, by word of mouth and by symbols, which have been laboriously developing through the millenia. To illustrate by a common contrast, the country boy coming to the city recognizes little but agricultural possibilities inherent in a vacant lot; whilst after he has made his way up in the business world, the knowledge thus accumulated enables him to deduce manifold possible uses of the same lot. It is the old proposition that good reasoning in a given situation depends first of all upon a stock of knowledge, or associations, relevant to that situation.

Now most of our knowledge we get second-hand, from tradition, teaching, or custom. Otherwise advancement of knowledge would never be possible. We get it moreover in a condensed form, and we have no conception of a large part of the ' assumptions ' which are implicit in our behavior. The farmer or the carpenter knows few scientific facts about the physical forces that he is successfully manipulating. Each art is made up of thousands of details, become customary, which were once in some sense discovered. The individual farmer could often give no reason, or only a foolish one, for cross-breeding stock or rotating crops; and of course numerous parts of the procedure of everyone could not finally be justified on grounds of efficiency, if everything were known.

But with all due allowance to the institutional economists for mistaken customs, there is a good deal more scientific ground for our behavior than there is of conscious reasoning it out, because all manner of the ready-made customs or conclusions which we adopt, do happen to be sound, and well-adapted to our practical use, — so that there is no occasion for us to inquire back of them. Such is the case with logarithmic tables and with rotation of crops; if the individual accepts them blindly, that does not argue against their adaptiveness. There is a fairly steady sifting of customary art in the direction of efficiency, — first because critical and experimenting individuals are always demonstrating improved processes; and second, because as in the cat's learning the puzzle-box, the essential steps toward satisfaction must always be gone through, while the unessential are occasionally omitted and so do not so strongly tend to become fixed habits.[1]

And hence, if people in buying land do not always go through all the lightning-calculations of utilities, and draw all the inferences which the marginal utility theory, according to dissenters calls for, it does not follow that the ultimate consumers' utilities are so remotely connected with the value of present goods such as land. Nor is it necessary to this theory to suppose that all the calculations which are in fact made by a given agent, would have been made by him if he had been born into a primitive society. Of course the customs or institutions of his society have contributed to his mental equipment, but the active factor in value is not a shadowy institution but the man in the market, a rational agent, whose behavior is influenced, according to the ordinary learning processes, by what he sees other men doing.

Another cause of variability in the accuracy of valuations lies in the apparent fact that certain desires seem to be more importunate in some people than in others. When some men are warned in the plainest terms what will come of their drinking, or other short-sighted conduct, they are nevertheless unable to resist the impulse. Some of us are ' carried away ' by anger, shame, etc., more than others. This means that certain responses — in given individuals — are so strong when aroused, relative to others which are then active only imaginatively, that the future utilities are very heavily discounted, and the agent is less ' rational,' in the sense of being farsighted, than his competitors are in similar external circumstances.

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[1] See discussion of this point, suggested by Watson, above, in Ch. XI.

Finally, there are two more sources of variability among individuals, which we have noticed in connection with reasoning: the habit of making thorough diagnosis of new situations, and innate reasoning ability. Careful procedure in considering all aspects of a problem before action is clearly useful, and it constitutes part of the value of any scientific training. Variability in power to reason, we are just beginning to learn about, through certain of the intelligence tests in which success does not depend on formal education or home culture.

What the average human accuracy is in valuation, therefore, the psychologist has no means of determining in general terms. It depends on the complexity of the situation and the information of the valuer, etc. Economic statistics (behavior facts) in the various circumstances, as in purchases of land or teddy bears, are the best guides to theory on this point.

Other Factors in Value; Competition

Besides the psychological principles we have been discussing there are many technological factors which play large rôles in the determination of particular values. Diminishing returns, increasing returns, joint supply, joint demand, are familiar names for analyses of some of these important habits of matter. One of the most significant is the principle of proportionality, or diminishing productivity, which has been expounded so fully by Professor Carver. There are natural (and variable) proportions in which water and other elements can be used in agriculture, for example; if the farmer has ‘ plenty ’ of water relative to his other materials, he would give nothing for more water, even though he would give almost anything rather than be deprived of all that he has. In an irrigating country, on the other hand, most of the farmers’ quarrels and litigation are concerned with the water. The water has considerable economic value, in the latter case. We can *do* more, in terms of final utilities, with additional units of the relatively scarce materials than with more of the relatively abundant; and we gradually learn to react toward them economically, — to strive hardest to possess these things that will ' produce ' the greatest utilities. But as our concern is primarily with psychological factors in economics, we shall make no attempt to cover these technological phases of value.

The psychological roots of competition are, however, of much interest.

It is from the general interaction of all wants with the complex environment that economic value emerges. We may think of non-economic values, in the sense of comparisons among such wants as are called ethical, religious, political, social, etc. It is the same question, How many of A are wanted as much as B? We speak often of a ' choice between evils,' and of ' this picture being prettier than that.' Economic goods are wanted ultimately for all these purposes, so that the earmark of things economic is simply the convenient and arbitrary one of ' goods which are ordinarily peaceably exchanged.'

But ' peaceably ' is a relative term, for there are numerous forms of human conflict, including economic competition. The main interest for us is in the question, how do limits upon competition progress? The human physiological endowment, placed in our natural world, inevitably gives rise to some competition. First, as we have seen, there are antagonisms between wants or responses within one body, — as well as certain harmonies. Relative to other persons, numerous of any subject's desires are strictly selfish, and as population increases (due to certain desires), the fact of scarcity of goods involves conflict. Even if population were voluntarily checked, it is likely that the emulative, pugnacious, and esthetic impulses would still cause some contention over nature's bounty. Obviously not all wants are egoistic, — the motives of family love, friendship, honor and compassion all soften the strife.[1]

It should be noticed that these motives do not contradict the general theory of valuation, nor do they overcome the discrepancies between wants and goods. The father who goes hungry that his family may eat feels keenly the fact of scarcity, and he has satisfied as many of his wants, in the order of their urgency, as the situation will permit, which is just what the theory of value predicts he will do. So of any altruistic act in business; it is a disturbing factor in the theory of exchange values, but not to the theory of individual valuation, for the agent has simply bought the satisfaction of his charitable want by foregoing his want of wealth. We must observe too that the most altruistic motives often enter into self-interested desire for wealth. No one can carry out many of his good intentions without some material resources; in fact substantially every person does have many unselfish uses for his wealth. In the market, where most of the people he deals with are personal strangers, it is probable that each one will strive to get all he can for his product.[1] Self-interest, therefore, which is assumed by economists to be prevalent in business transactions, is not at all a matter of egoism or selfishness in all motives; and in fact, among any group of men who are equally canny in business we shall find various degrees of altruism when it comes to spending their incomes.

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[1] Many apparently altruistic desires have a self-reference which is exclusive. The local magnate, for example, may want various charities which benefit his community, but these are to be known to all the world as *his* benefactions. We are all too familiar with various kinds of unselfishness with ' strings tied to them.'

It is not to be assumed, either, that the policy of getting full market value of what one has to sell — the policy dictated by self-interest — is necessarily in the long run a less benevolent policy than that of selling according to the supposed circumstances of the purchaser. One of the greatest contributions of Adam Smith and his followers was the demonstration that this self-interest policy, if combined with wise consumption, does tend toward the most economical satisfaction of human wants, — though the business man himself least suspects it.[2] Carver has supplemented this line of thought by showing that in the field where wants are identical with needs, production so as to maximize profits is exactly the same policy as would be dictated by benevolence, since it is in supplying the things most urgently wanted that the largest profits are to be made.[1] The person who wants to do business philanthropically is likely to give his charity indiscriminatingly, since it falls to the people who happen to come into his salesroom or to seek his employ. Often his chances of doing good would be about as great if he threw his money into any crowd on the street.

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[1] Cf. Warner Fite, "Moral Valuations and Economic Laws," Jour. Phil. Psy., etc., 14: 5–19 (1917).

[2] "It is to no purpose, that the proud and unfeeling landlord views his extensive fields, and without a thought for the wants of his brethren, in imagination consumes himself the whole harvest that grows upon them. . . . The capacity of his stomach bears no proportion to the immensity of his desires, and will receive no more than that of the meanest peasant. The rest he is obliged to distribute among those, who prepare, in the nicest manner, that little which he himself makes use of, among those who fit up the palace in which this little is to be consumed," etc. — Theory of Moral Sentiments, Pt. IV, ch. i.

The egoistic motives may be ‘ harnessed ’ for the general good in several ways, and the principal harness is custom. In the earliest days of our race, we may suppose, competition was mainly physical, employing fists, teeth, or crude weapons. But the most primitive societies of which we have direct knowledge have set some limits of custom on spontaneous uprisings of contention. Members must settle their quarrels without intratribal murder or wife-stealing, let us say, or they may accumulate possessions only on condition of giving the medicine man a tribute. By artificial arrangements the egoistic motives of fear — of physical or of supernatural punishment — have been set against the other egoistic motives to violence.

Quite early the emulative, social-approval, instincts are thus harnessed. This propensity pushes children and men into a race for distinction, for eminence or fame; so that it (‘ambition’) has been recognized since most ancient times as a prime cause of competition; but since in most people it is not satisfied with grudging or perfunctory approval, it becomes one of the strongest checks on heedless egotism. We have already discussed this phase of custom as far as we are able. It is in this direction that we look for theory as to the plane of competition, and as to what stunts our so-called self-interest may be trained to do. The transformation of (ultimate) wants is also of the greatest importance here, since the further they can be harmonized, the less sharp will be competition. The primitive customs at which we have guessed are the great-ancestors of our present legal and moral restraints; they are the beginnings of that evolution in the forms of conflict which is the riddle of social philosophy.[1]

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[1] Essays in Social Justice, especially p. 106.

ADJUSTMENT OF PRESENT ACTION TO FUTURE WANTS

In summary, valuation is intelligent behavior; it is the adjustment of our present action to our future wants. We acquire skill and accuracy in it just as we do in other adaptive and future-referring acts. We employ habits unquestioningly so long as no obstruction or ambiguity arises, and it is only in a doubtful situation that the act of valuation, as of reasoning in general, occurs. We save labor and trouble by borrowing other people's habits, which originated by some kind of reasoning; and by this cumulative growth of knowledge (adaptive behavior-tricks) we have achieved increasingly complex, roundabout means of satisfying our wants,—incidentally developing new wants faster than we could satisfy the old. As in all reasoning, there are all shades of error in our valuations, many of which are as serious as that of the squirrel who hoards nuts that are worm-eaten. The cause is the same in both cases, — the responses are not adjusted to all the 'relevant' facts of the situation.

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[1] Among the manifold attacks on this riddle there is a popular one by Franz Oppenheimer, who sees in the State the survival of the "political means" to wealth (violent spoliation), as opposed to the equally ancient "economic means" (voluntary exchange). (The State; Eng. trans., 1908.) He appears to think this distinction is known to every human mind, and that the primitive (or even modern) man has a moral consciousness, when he despoils a member of an alien tribe, which is quite different from that in which he slays wild animals and plunders their stores. In our view the two cases are originally accepted in the same matter-of-course way. Direct, and if necessary forcible, appropriation is doubtless the most ancient method of satisfying wants; the "economic means" evolves through long ages; and to identify hastily "political means" with violence is to beg a presumption that all governments are 'exploiters.'

CHAPTER XVIII

PSYCHOLOGY IN SAVING

The Social Advantage of Capital

In Western Civilization, thrift has long been esteemed a virtue. Sombart, whose elaborate historical researches lend his words great weight, tells us that the ' middle-class virtues ' of frugality or careful attention to trifling savings, were born as late as the fourteenth century, in Florence. It is in the writings of Alberti and the memoirs of Leonardo da Vinci's grandfather, of this period, that he finds the beginnings of those wise saws on economy which found fullest expression in Benjamin Franklin.[1] Previous to that time, he says, there had been only the seigniorial fashion of profusion among people of means, and among peasants the enforced parsimony of want. While Sombart is doubtless right as to the Franklin type of propaganda, there is no doubt that thrift, in the sense of reasonable provision for future wants, has had a moral standing since prehistoric times. The older parts of the Bible and the Greek philosophers commend it or take it for granted, and the Christian precepts of "take no thought for the morrow" were avowedly revolutionary doctrines, justified by the imminence of the world's final catastrophe.

We shall presently attempt some genetic explanation of the growth of such prudential sentiments, but first let us consider for a moment the technological aspects of saving.

Up to the Industrial Revolution of the eighteenth century, the technical methods by which saving could be accomplished were much more restricted than is the case today. Thrift in all those preceding ages meant chiefly to husband your stores of grain and your domestic animals, or to hoard treasure and jewels, which could usually be exchanged for things you would want, so that when flood, drouth, or pestilence might come, you would not be wholly without succor. Great fortunes were characteristically large flocks of animals or hoards of plate and precious stones. The thrift which the Paraguayan Indians of Mill's illustration had not learned, was merely restraint from slaughtering the work oxen for food. Adam Smith voices an almost pious horror at spendthrift ways, which doubtless springs from moral (and patriotic) tradition over and above his perception of the technical rôle of capital. "The prodigal perverts" his patrimony when "he encroaches upon his capital. Like him who perverts the revenues of some pious foundation to profane purposes, he pays the wages of idleness with those funds which the frugality of his forefathers had, as it were, consecrated to the maintenance of industry."[1] Such profligacy diminishes the gross funds which can employ labor, hence restricts the population and wealth of the nation, — which is necessarily wrong.

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[1] The Quintessence of Capitalism (translation of Der Bourgeois), Ch. VII (original edition, 1913).

Now, although Smith, Mill, Say, and the classical economists generally, carried on further tirades on the advantage of saving over consuming luxuriously in that the former use gives more employment to labor and so in the long run raises wages, it was Böhm-Bawerk who put most clearly into relief the technological advantage of capital. Capital, said he, is merely tools, which are produced by labor from natural resources (' land '). Further labor, using the tools, can produce more consumable goods than the total labor (including that which made the tools) can produce in the same number of working days, working with less elaborate equipment. More firewood, or corn, for example, can be produced by a given number of labor days, if axes or plows are made first, than if all the labor is done with unaided hands. There is also a ' biological productivity ' of certain forms of capital. Seed, when planted, renews itself a hundredfold; and a herd of cattle on the plains grows by spontaneous propagation if their owners leave them to breed. The more capital saved, then, subject to technical limits which invention is always pushing into the distance, the less is the labor required to produce consumable goods.

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[1] Wealth of Nations, Bk. II, ch. iii.

The course of invention, to be sure, is by nature unpredictable, but in general tools grow more complex and require ever more labor to build whilst successively they reduce the aggregate labor cost of commodities. The discoveries of the last century and a half have given us processes so immensely productive that population (in the Western world) has increased unprecedentedly along with (apparently) some general rise in the level of comfort. Everyone hopes that mechanical progress will soon eliminate poverty as we know it today, though many reformers fail to see the conditions of saving necessary to their dream. They revile the ' capitalist ' and ridicule the economist for his concern over accumulation, but one and all they talk of the wonders which will be accomplished by automatic machinery. Since by general consent, therefore, tools are useful in production, we shall now take the technological aspects of capital for granted, and inquire into its psychological phases.

Evolution of Providence

In the first place we have the fact that interest is paid and has long been paid for the loan of capital. Even granted that ' explicit ' interest taking was for some time restrained by Canon Law or otherwise, ' implicit ' interest persisted all the while in all prices of producers' goods. How is this ' institution ' maintained on the grand scale we know? Technological or biological productivity of capital alone does not explain the matter, for as Böhm-Bawerk made clear (and then forgot), *physical* productivity is not necessarily *value* productivity. The potential advantages of a piece of capital might be counted in full into its present price, so that any orchard, for example, would exchange for as many apples as it would ever produce. Such would be the case if people in general wanted consumers' goods, available only in the future, with the same intensity as they want the same kind of goods available for immediate consumption. The Marxian theory that interest is due only to forcible exploitation has some place in the whole story, but sufficient cases of interest-giving and taking on a free contractual basis are easily found to make this explanation inadequate. A number of writers, especially Böhm-Bawerk and Fisher, have shown in detail that contractual, explicit interest is only a small part of the real phenomenon of interest; that implicit interest lurks in practically every price, — not merely in the values of houses or farms. It would be impossible to stamp out all interest-taking by law, so long as any free buying and selling remained. The pivot of interest theory, therefore, is in ' time-preference,' or people's ' impatience ' — we use Fisher's well-known terms — to get enjoyable goods. This impatience causes them, on the average, to sell their future birthrights for present messes of pottage to the extent of some five or ten per cent.

Taking for granted, now, the general argument of Fisher in his admirable The Rate of Interest, we shall consider the contacts of our psychological data with the economist's principle of time preference. Unhappily psychologists have less to offer us on this than on any of our other problems, — that is, they have done less work that touches on it.

It is prudence, however, rather than improvidence, that is hard to account for. The lower animals have (and presumably our prehuman ancestors had) as Aristotle said, no sense of time; they live in the present and make no responses to future wants. But men, The Philosopher went on, have memory and imagination (more of these than the brutes, anyway), and so they act with reference to a long-run satisfaction.

But how *can* ' future wants,' physiologically, act on us in the present? If we act at all, is it not because of a present want? A future want, by definition, will not exist for some months or years.

Of course the actual future wants are not operative now, and for that reason we often sadly miscalculate what they will be. But what we do is to *learn to respond* to conditions in distant times and places, through *signs* or ' shadows cast before,' which are immediately present to our senses. It is purely a case of learning, save to the extent that instinct makes us unwittingly provide for the future as a squirrel hoards nuts, — and such cases in human affairs are negligible. When the mouse learns to avoid the white doorway which harbors an electric shock, we might say that he is moved by a future want to get away from the pain, — he responds to the white arch, which is the sign of a more distant situation. On only a little more complex scale, the small boy avoids the green apples which have previously given him stomach ache. Both these sorts of behavior are clearly provident, and both are clearly based on experience and imaginal revival of it. The behavior may become stabilized into habit, and the images fade away (such is usually the case with adults and green apples); but it is still implicitly provident. As far as we know, any case of economic providence will be resolved into the elements of these absurd illustrations,—instinctive likes and dislikes, and learning as to means to satisfy these wants on conditioned reflex principles. The ' future want,' whether it be provision against pain, hunger, the disgrace of poverty, or the positive satisfactions of eating, fame, or the welfare of offspring, is effective only when its elements have been experienced by the agent in a context toward which he learns to react as to the ' cause ' of that desired and known experience.

The view has been fathered by Professor John Dewey, it is true, that human beings react strongly toward the merely unknown, toward discovery, toward "creative experience."[1] No doubt most people would recognize such a consciousness; but the stimuli involved are without doubt definite present objects. If you are considering an airplane ride, these stimuli include the man who is offering to take you, and a mass of images of past delightful experiences in swings, automobiles, and other ' adventures.' To say that such a prospective airplane passenger is moved by ' the unknown ' is like saying that the small boy is responding to a stomach ache he will not have,—a portentous metaphysical puzzle! It is simply one of the innumerable confusions arising from subjective psychologizing.

TIME-EVALUATION

How shall we conceive, now, of the struggle within the breast, between the impulse to present enjoyment and the desire for future benefit? Our discussions of reasoning and of valuation have indicated the way. It is indeed a case of valuation, or of comparison between two utilities. Economists know that the present enjoyment will generally prevail over the same kind and amount of enjoyment available only in the future. The 'present want' is one system of reflexes, including the numerous responses which make up 'it is to be right now,' — not least among these are the aroused consummatory reactions, such as the flow of saliva. The other system of responses, which refers to a more distant consummation, is perhaps composed of a wider range of imaginal elements, and these must be extensive and well-established to overcome the force of the incipient consummatory reactions in the 'present want.' It would be premature to attempt to analyze any given instance further now, since the one point on which psychologists would reach most complete agreement is that each of these want- and desire-units, which economists handle so freely, is for psychological analysis a vast constellation of reactions which nearly defies understanding. But we have perhaps shown that a much fuller understanding of the process of time-evaluation is to be hoped for from psychological research.

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[1] See "The Phases of the Economic Interest," by H. W. Stuart, in the volume called Creative Intelligence, by Dewey and others (1917).

One thing is fairly certain, both to psychology and to common sense: there is a steady growth of providence parallel to and perhaps identical with, the growth of knowledge. No one can provide for a future want until he learns what action in the present will so provide, and this knowledge has been steadily developing through the ages. It is often said that most people learn only by their own bitter experience; they will not take the word of some one else. Our small boy, to be sure, usually insists on personal acquaintance with green apples, but as he grows older he becomes more teachable, and when he sees an electric station marked "Danger — 10,000 volts," he does not seek empirical confirmation of the warning.

This is not to say that all human species, or all members of any species, can be taught providence. The range of general learning capacity, as we have had occasion to insist, varies considerably in both cases, and there are moreover differences in original strength among the impulses, so that one man finds it most difficult to avoid intoxication, while another's vice is overeating, and yet another is unusually solicitous about his children, etc. Much of these apparent differences, however, may doubtless be ascribed to the circumstances of their rearing. Bücher's picture of primitive man as almost wholly improvident, living entirely from hand to mouth,[1] is therefore perfectly plausible, but we must distinguish sharply between those branches of mankind who somehow become possessed of an inheritable large learning capacity, and those, nearer the brutes in intelligence, who can never get beyond a certain stage in intelligent provision and hence are still with us as ' primitive men.' A host of special problems are here suggested, on which further data must be sought.

THE MARGINAL SAVER, AND THE EQUILIBRIUM OR FUNCTIONAL THEORY OF INTEREST

It is now recognized by virtually all theorists on interest that some saving would go on even if no interest whatever were paid, — in fact, that some accumulation would take place in the face of negative interest. That is, many of us are so provident that we should be willing, if necessary, to pay for facilities for ' storing ' our savings until that time in the future when we should need them more than we do now. Possibly some of this ' automatic ' saving is quasi-instinctive, like the dog's or the squirrel's hoarding. Most of it, however, is due to the habits dependent on our special environment, — accumulations of knowledge, of technical arts making saving easy, and of precepts and examples exhorting thrift. ' Rainy-day ' saving in some degree is practised by nearly all. The parental instincts furnish a natural drive toward accumulation, which is reinforced by customs calling such provision for the children praiseworthy.[2] Force of habit keeps many people accumulating when other motives have become well-nigh obsolete, and the desire to make oneself conspicuous for his large hoard (which is at bottom the same motive as the miser's who simulates poverty to the world) is of course a great force toward the heaping up of possessions.

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[1] Industrial Evolution, Ch. I.

[2] Cf. Marshall, Principles, Bk. IV, ch. vi, secs. 5, 6: — "Family affection is the main motive of saving."

It is sometimes loosely said, moreover, that the very rich are physically unable to consume their vast wealth, and so they 'save' in spite of themselves.[1] The present writer considers this proposition doubtful, except to the following extent: On the principle of diminishing utility, it is less sacrifice for the man with a thousand dollars either to lose or to refrain from consuming *one dollar* than for the man who has only one hundred dollars all told. But is it easier for the one to spare any given *fraction* of his stock than for the other to spare the same fraction? The affirmative does not follow from diminishing utility. At any rate, even supposing that the man with a thousand dollars will, on the average, be willing to save ten dollars for a lower percentage premium than that for which the man with a hundred will save one, we are still not sure that the former's fortune ever could become so large that he would have no reluctance whatever to save any part of it. Cut off his interest and he may still save, yes, but so may people of any grade of fortune, from the motives we have reckoned with in the preceding paragraph.

But, the usual analysis goes on (say by Carver, who was a pioneer on this point [2]), such automatic saving does not supply as much capital as society demands. The scale of demand offers are based considerably on the 'productivity' of capital, — the advantage in total labor days from using tools. As more can be used with profit than will be forthcoming without interest, a part of this advantage from the use of capital has to be paid as interest to the 'marginal saver' to overcome his preference for present enjoyment of his wealth. Thus the theory of interest is made part of the theory of value, with demand and supply in equilibrium. Demand varies with the diminishing usefulness of added installments of capital, in any given state of the arts; and the resistance to saving increases as more installments are withheld out of a given income.[3] It is presumed that the reader is familiar with this analysis, as found in Carver, Marshall, Taussig, Fetter and others, — essentially it is in Böhm-Bawerk and Fisher. Fisher develops a useful concept of individual income streams in time, which have much to do with any individual's rate of time preference, and he shows ingeniously that the less ' impatient ' persons keep lending to the more impatient until the income streams of each have been altered so as to bring the rates of both to the market equilibrium.[1]

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[1] Cf. Hobson, Work and Wealth, pp. 98, 99; though the above does not quite state his position.

[2] See his "Place of Abstinence in the Theory of Interest," Quar. Jour. Econ., 8: 40–61 (1893).

[3] The marginal saver, of course, does not refer to any particular set of persons, but to the final increment in every saver's accumulation.

Fisher protests against the so-called productivity of capital as part of interest theory, but he does not entirely do without it. The rising income stream of the entrepreneur is dependent partly upon the technical productivity of the capital he borrows. Interest would exist, no doubt, if there were only consumption loans, but the scale of lending and the rate of interest would undoubtedly be different from what we now know.

In our judgment the effect of the Great War on interest rates tends to confirm the equilibrium theory just mentioned. The net effect up to the present (1920) has been an extraordinary increase in the interest rate (on equivalent security) — say from four or five to seven or eight per cent — much more than the usual increase in other periods of rising prices. There was inconceivable destruction of capital in the war, including a great deterioration of transportation facilities. New capital, therefore, can be applied to uses more important and ' productive ' than is usual in normal times; new engines and cars, for example, make a much greater difference in ultimate production than normally, — their uses, that is, are considerably above the usual margin of indifference. As to the supply side, everyone had been saving to his limit to supply munitions and food for the destruction of war, and so the further saving necessary to supply rail or any other equipment is made more reluctantly than is the case with the smaller amounts required in normal times. Popularly and inexactly we might say "the demand for capital has outrun the supply."

Marginal Saving Shown Only in Mass Action

As in the marginal theory of value generally, we should be careful not to speak as though every saver made refined calculations statable in mathematical formulae. Introspective evidence alone would brand the marginal saver as a myth. Probably very few persons could say accurately whether they save more when the market rate of interest goes up. Most of us would say we save what we can in any case, and it is a matter of luck what interest we get. In this case again it is evidence of the behavior of large masses, with ‘ other things equal ’ in a series of experiments, that alone will give us laws. It is certain, as has been pointed out, that there is much intramarginal saving, and the theorists also commonly point out that some people have a certain (‘ unearned ’) income as a goal, and hence must save more rather than less when the interest rate goes down. Fisher’s suggestion that every purchaser discounts the future uses of hats, overcoats and everything else, and other writers’ illustrations of a traditional savage borrowing a canoe, occasion some mirth even among reputable economists.

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[1] The Rate of Interest (1907), especially Chs. VII, VIII.

There is much less doubt that most people watch pretty closely for means of getting the largest possible return on *whatever capital they do save*; but this fact alone does not prove that there are any marginal savers. It is conceivable that the automatic forces determine the total amount saved, whilst the rate of interest (based, on this assumption, wholly on the diminishing productivity of capital) merely apportions the total stock to the most remunerative uses. Even if this be really the case, we may observe, the institution of interest performs a valuable social function by directing capital into the channels of greatest effectiveness.

Taussig inclines toward the opposite hypothesis, namely, that there is a normal rate of time preference — about four to five per cent — and that the amount of capital supplied increases or diminishes rapidly in response to slight variations in the interest rate, which are due to oscillations in the productivity-demand curve,[1] and soon settles to its normal price. Interest is here conceived to be a case of value under constant cost. He points out that the interest rate (exemplified by the French government’s *rentes*) has remained within a few points of this four-or-five per cent level for several centuries, although the world’s stock of capital, even in proportion to population, has increased with inventions some thousand-fold.

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[1] Principles, Ch. XXXIX, sec. 5.

The oscillations in explicit interest rates would probably have been more extreme, however, if in the modern period capitalists and entrepreneurs had been usually separate. The fact seems to be that our great accumulations have been made as profits, and retained as surpluses in the businesses in the hope of earning further great profits.[1] This is in many respects like lending at high interest, and helps to account for the difficulty of attracting capital to public utilities when they have been limited to a ' reasonable return ' on their *bona fide* investment.

But when all is said, there is no more reason for doubting the existence of the marginal saver than there is for rejecting the marginal buyer. Both are abstractions, as the ' average man ' always is. They represent simply a mathematical expression of the ' average ' man's reaction toward infinitesimal changes in prices; and when mass statistics are available they show a regularity of action which make them susceptible of such mathematical analysis. In like manner the average effect of vaccination does not show up in any one case, but the calculation of such an average is an indispensable step toward the control of smallpox. An average quantity or measurement even in physics may not coincide with any actual observation, yet such averages form the basis of all our modern technology. The sufficient vindication of the marginal saver is the expansion or contraction of aggregate saving in any social group with the rise or fall of interest,—other things being equal. Good tests of the theory, with other things equal, must necessarily be rare. The fact that Government, or any individual, can borrow more at six per cent than it can at five per cent might mean only that it attracts capital away from other borrowers who are unable to pay as much. But the difficulties of making good tests should not be insuperable.

REDUCING THE COST OF SAVING

From the concepts of automatic saving and the marginal saver there follows the concept of saver's rent or surplus, analogous to consumer's surplus. One price (with some practical limitations) rules in the market, and those who would have saved for less than this price get a payment that would not have been necessary to evoke their own service. This part of the total price, which is sometimes called "unproductive surplus" paid by the modern industrial system, is becoming a focal point of the attacks of modern social reform theorists such as Hobson. The idle rich, supported by interest without doing a stroke of work, are marked for extinction by these as by older socialistic theorists, but unlike the latter, these modern critics recognize that a part of our existing capital stock would not be saved unless interest were paid. Not all interest *per se*, therefore, but the ' surplus ' element in interest, is the object of their attack. The problem is to cut off this hidden element, and still leave motives adequate to supply the necessary amount of capital.

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[1] Cf. V. S. Clark, History of Manufactures in the United States.

Naturally the first suggestion is to transfer it to the whole community by taxation, along with the pure rent of land, which is likewise considered an ' unproductive surplus ' when paid over to private landlords. Ground rent might, but for administrative difficulties and questions of justice toward the owners, be taxed away completely without any prospect of the supply of land being diminished, but the rent element in interest is even harder to point out or to reach. Something along the line of this program is realized, probably, in progressive taxes on ' unearned ' incomes (both rent and interest), for it is the saving of the larger owners, who are therefore receivers of the larger interest incomes, which is particularly pointed out as ' automatic ' saving. Of course the rainy-day saving of the poor is also carried on very largely without regard to the rate of interest, and interest paid on it is unproductive surplus too, from this point of view, but it is not suggested that this income be confiscated by the state while the middle-class person who demands interest as a condition of saving, is allowed his bribe. The project of striking off ' unproductive ' incomes clearly is difficult of execution and is of uncertain justice.

More drastic is the socialist proposal of making the state the exclusive capitalist, and forcing everybody to work. Everyone will then bear a proportionate share of the sacrifices of saving; no one will be allowed to live in idleness. This plan in the hands of either a benevolent despot or a society of wise men might indeed carry on the requisite accumulation without the malpractices of individualist capitalism; but the slight evidence as to its feasibility, with human nature as it is, supplied by the communal enterprises of modern cities and states, rather tells against it. When a public work requiring considerable capital is decided upon, such as a school, water plant or bridge, almost invariably private capitalists are called upon to supply the capital by purchasing the public authority's bonds. Considerable stocks of capital are indeed *acquired* by states and municipalities, through unearned increments or the retiring of bonds before the property is worn out, but the amount of real *saving* done by citizens in corporate capacity is comparatively small. If private capitalists were extinguished, of course the state affairs would assume new importance and we are quite unable to see what the long-run effect would be upon capital equipment.

INHERITANCE

The motives concerned in accumulation do not relate merely to a leisure-class income for the original saver. He saves in many cases for the conscious purpose of providing as large an endowment as possible for his heirs, and so economists appraise the institution of inheritance chiefly as to its influence on saving. It might be better for society and for individuals if inheritance were abolished, and the hereditary idlers thus cut off at a stroke, if we could take the supply of capital for granted. But though wealth may be a doubtful boon to the children, there is little doubt that many fathers are stimulated to save by the prospect of their children receiving the accumulation and becoming respectable leisure-class members. Abolish inheritance, and you go a long way toward equalizing opportunities throughout the rising generation, as well as reducing the leisure-class evils to a minimum; but will men ever accumulate so much for the state as for their families?

This is another problem which can be attacked only empirically; psychology can say little more than that it would expect, from the indications of our biological evolution, that labors for love of family will in general be more sustained than labors for love of the state. But in practice, inheritance taxes with a moderate exemption to provide for education of the heirs, appear not to discourage accumulation. We can at least favor the reduction of collateral inheritances (to distant relatives), since these appear to play little or no part in motivating saving. Inheritance of large fortunes is more on the defensive than ever before; egalitarian theory and the pressure on public financiers to find revenues combine to push progressive death duties higher and higher by both central and local governments. However extreme the movement may become, and however such taxes are squandered by the state for current expenditures, this movement seems to the writer to give more promise of curing the real evils of capitalism than does any program for attacking interest-taking.

Increasing Providence

Assuming that the present institutions as to interest and inheritance will continue for some time, however, do our psychological principles suggest any means of improving the conditions of accumulation?

First, what has been said on influencing wants in general points to possibilities of inducing members of the leisure class to become more obviously useful. In some respects this course is preferable to any forcible means of 'putting everybody to work,' for unearned income has often supported men engaged in work that became highly esteemed later but which at the time could not have been sold. We must recognize that a leisure class, established (as it was) by conquest, and containing (as it always has) a large proportion of unworthy members, has been nevertheless the source of most of our art, science and invention. If equality had been maintained, we should probably still have an equality of ignorance and squalor. The few members of this leisure class to whom we owe so much of the good in our lives were not thought especially useful by the majority of their contemporaries, — they were considered 'idle' by the masses because they were living in advance of their time. And so it may well be for some time in the future. But so long as the line between production and non-production is liberally drawn, no one need hesitate to try to cultivate ideals of usefulness in the leisure class. If their living were more frugal and their pursuits generally more acceptable to their poorer neighbors, the institution of interest would lose many of its enemies.

A general increase in providence, moreover, would be equivalent to lowering the real cost of saving. It would increase total utility, because capital or ' labor-saving devices ' would roll up the faster. With lower interest, business men could afford to develop all manner of better mechanical equipment. It is in this connection that the disputes over human nature and the interest rate become important. Is there a quasi-instinctive time preference, as the nearly stationary rate in the past has suggested to Taussig?

We believe not, and to that extent we sympathize with the historical or institutional economists' criticisms of expositions which impute refined calculations on present and future utilities to savages. Our own barely human ancestors, as well as other savages with less potentialities, were probably about as improvident as lower animals. The human instincts take care of man fairly well in the present (in tropical regions), but if his environment temporarily fails him, he perishes. The growth of knowledge, which is our means of reacting with reference to distant times and places, is a slow and cumulative process, and a considerable store had to be embodied in tradition and custom before there was any such thing as ' value of future goods.' Then, the need of provision was but dimly realized, and a considerable premium placed on the present. A high rate of interest — for ages implicit, but finally recognized as ' usury ' — was necessary to even the balance between the urgent call of the present and the fainter summons of the future. We therefore look upon providence as a growing thing and time preference as variable with time, place and geography, but tending to diminish in any people whose native learning capacity is high. Risk, however, will become more of a deterrent as it is better recognized, and hence that element in gross interest may increase except as far as the actual hazards which risks stand for are reduced by collective action.

The impulsiveness of certain individual wants seems to make for persistence of impatience. The so-called lower wants, of hunger and of escape from pain, are the most impulsive, however; and these recede to the background as the general level of comfort rises with increased production relative to population. The further we get out of a pain economy, the easier it is to get still further ahead. There may also be a slow drift by natural selection toward survival of those people who are least impulsive, and have the largest native capacity for prudence. In modern times, to be sure, the imprudent as to reproduction have left the more numerous progeny, but other customs may sometime make this result less usual; and anyway, in the competition among societies, it is the European type rather than the improvident savage which survives.

Not merely growth of knowledge, but positive propaganda, is likely to raise the general level of providence. The arts of the advertiser are being brought to aid the long-standing appeals of the preacher, to ' sell ' the habits of thrift; whilst instruments toward their practice, such as dime banks, building and loan associations, insurance companies, are being placed all about us. Much of this propaganda is motived by mercenary considerations, it is true, and many of the appeals are fallacious; but persuasion probably has a great rôle to play in lowering the interest rate by reducing the psychic resistance to saving.[1]

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[1] The writer recently saw an advertisement of a bond house which dwelt on the increase of "pleasures" which investments would mean. It struck him as less effective than the types which appeal in the name of a future ' career ' or better provision for dependents.

CHAPTER XIX

WORK

Desire for Wealth as a Motive in Work

If men were not offered incentives to work, in the shape of bribes or threats, what would they do? Many of us are inclined to say, "Man is naturally indolent. If he is not stimulated to work he will remain idle, doing nothing at all." But that is a crude view. ' Idleness ' always consists in doing something, if it be only drawing breath; and we frequently make jokes about the strenuous efforts which some loafers will make to avoid doing ' work.' Play, of course, often involves heart-breaking exertions. The distinction between work, therefore, and play or idleness, is like the farmer's discrimination of ' weeds ' from ' plants,' it turns on the economic value of the results. Work or labor is the activity, not necessarily irksome, which results in goods that are scarce and command a price.

Bücher has pointed out that among the most primitive peoples, work, in the sense of industrial activities, seems to have originated in those spontaneous activities not related to the lower wants, which we would at first sight term esthetic or playful.

> In all probability there are instincts similar to those that are found among the more intelligent of the lower animals, that impel man to extend his activities beyond the mere search for food, especially the instinct for imitating and for experimenting. . . . The taming of domestic animals, for example, begins not with the useful animals, but with such species as man keeps merely for amusement or the worship of gods. Industrial activity seems everywhere to start with the painting of the body, tattooing, piercing or otherwise disfiguring separate parts of the body, and gradually to advance to the production of ornaments, masks, drawing on bark, petrograms, and similar play-products. In these things there is everywhere displayed a peculiar tendency to imitate the animals which the savage meets with in his immediate surroundings, and which he looks upon as his equals. . . . Even when the advance is made to the construction of objects of daily use (pots, stools, etc.) the animal figure is retained with remarkable regularity; . . . and lastly, in the dances of primitive peoples, the imitation of the motions and the cries of

> animals play the principal part. . . . All regularly sustained activity finally takes on a rhythmic form and becomes fused with music and song in an indivisible whole.[1]

Although the Scriptural conception of work as a curse, involving unpleasant sweating of brows, is validated by much of daily experience, modern economists are giving increasing attention to the more pleasurable kinds of work. In part this shift of emphasis is doubtless due to the somewhat higher level of comfort which people of today enjoy, as compared with Scriptural times; in part it may be ascribed to the acumen of earlier generations of economists who perceived that many of the ' privileged classes ' such as clergy, artists, governmental officials, are actually producers, as well as the man with the hoe; and that the earlier hours of almost anyone's labor are felt to be pleasant. But to the ' marginal unit ' of labor, and to many units somewhat below the margin, there are psychic resistances to labor which must be overcome by positive motives, and we shall now attempt some use of our psychology in analyzing both the positive and negative forces concerned in work.

The most obvious, and by far the most important, motive to labor in modern societies is the want for wealth, which is desired as a means toward getting goods which satisfy the individual's final wants. In the savage state, man, like the brutes under our own eyes, was impelled by his immediate wants to make direct operations on nature, such as gathering nuts, carcasses, fruits, — in short, to carry on the Crusoe-berry-picking of economic lore. Economic historians call this earliest stage of economy ' collectional economy,' ' direct appropriation,' or ' grubbing, hunting and fishing,' and they point out that the stages of *culture* — animal culture or agriculture — were possible only after a vast development in knowledge and discipline.

Presently human groups acquired by various steps the tricks or habits of division of labor and of peaceful bargain and sale (in many cases division of labor was by customary communism within a tribe, without individual sales), and the generations born into this more advanced culture learned from their fathers these artificial chains of causation between efforts and satisfactions. Within the limits of his nature and nurture, each newcomer adopts that occupation which promises to give him the largest possible want-fulfillment, by a series of exchanges, for his effort. The limitations on the knowledge and opportunities of every human being are so great that no one, probably, finds really the most efficient way to satisfy his wants, but we all choose the best according to our lights.

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[1] Industrial Evolution, pp. 27, 28.

Since all people (disregarding the more or less feeble-minded) are in some degree intelligent in perceiving what they have to do to satisfy their wants, and since most of their wants are to be satisfied by purchase through wealth, a system of 'payment according to the individual's output' is always a reliable way of inducing men to work. Horses, dogs, rats, to the extent of their learning capacity, also 'labor' for the rewards they have learned to associate with certain acts of their own. The more intelligent any creature is, and the more wants he has, the more certainly can he be counted upon to respond to true causal connections between rewards or punishments and work. The more stupid or easily satisfied he is, the more immediate must the stimulus of food or hunger or whip be to arouse him to exertion. Systems both of slavery and communism find it worth while to provide at least some privations or extra doles of food and other comforts, if they are to get the most work done by their laborers.

There are many facts which are occasionally brought forward by our economic heretics to contradict this principle, but the contradictions will not stand criticism. For example, men in industry today frequently loaf on the job, — but mostly when they have found that it can be done without diminution of their pay. When a 'scientific management' system is installed which apportions rewards accurately to the individual's output, the workers respond with increased production, unless other motives (mostly prudential ones also) are at the same time aroused by other factors in the situation. The trade union objections to the system, in other words, are based much more largely upon the individualistic fear of wages per unit of product being cut than upon the moral precept that all ought to get the same daily wage.

Again, suddenly increased wage rates sometimes result in diminished production because the workers can buy their customary commodities for fewer days' work, and prefer for the time being to take holidays in the country rather than earn more money by working full time. But give them a year or two, or increase their pay more gradually, and the proposition that wants for purchasable goods increase faster than the individual's money income will apply to them also.

A third apparent contradiction is raised by the case of some professional and business men and state officials, who are said to do their best work regardless of the amount of their pay.[1] We shall presently try to analyze further the truth contained in this statement, but here let us point to its obvious limitations. Are there no *grades* of pay in any of these services? If one post pays more than another, is it purely a matter of luck who gets the better paying posts? The observation of most of us is that business executives, professional men, and governmental servants usually get promoted in salary only when they become 'worth' more; their pay, as well as that of the humbler laborer, depends on their output, and this fact stimulates them to do their best. Of course the product of a judge or of a professor is less tangible than that of a coal-hewer, and so there is more chance for misjudgment by those who determine the salaries of the 'higher' ranks. Whenever, due to some lack of connection between results and payment, a sinecure exists, the general judgment is that the holder is not apt to be industrious in his ostensible occupation. He may have better things to do.

Since practically all men are so nearly dominated by the wealth-getting motive in their attitude toward work — and this because so large a proportion of the goods they want, whether for subsistence, play or love, may be had only for pay — economic reasoning based upon this motive alone has been highly serviceable in the statesman's or industrialist's dealings with actual economic life. J. S. Mill, in his earlier years, conceived of economic science as an abstraction, not to be considered true of the real man, just as Bagehot did:

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[1] See for example, Hobson, Work and Wealth, Ch. XIII.

> It (political economy) does not treat of the whole of man's nature as modified by the social state nor of the whole conduct of man in society. It is concerned with him solely as a being who desires to possess wealth, and who is capable of judging of the comparative efficacy of means for obtaining that end. It predicts only such of the phenomena of the social state as take place in consequence of the pursuit of wealth. It makes entire abstraction of every other human passion or motive except those which may be regarded as perpetually antagonizing principles to the desire of wealth, namely, aversion to labour, and desire of the present enjoyment of costly indulgences. These it takes, to a certain extent, into its calculations because those do not merely, like other desires, occasionally conflict with the pursuit of wealth, but accompany it always as a drag, or impediment and are therefore inseparably mixed up in the consideration of it.[1]

Jevons too, who based his economic reasoning avowedly on the strictest hedonistic premises taken from Bentham, did not suppose wealth or even fame to be the sole motives in work. Exclaiming his admiration of the neglected researches of Cournot and Gossen, he said:

> The history of these forgotten works is, indeed, a strange and discouraging one; but the day must come when the eyes of those who cannot see will be opened. Then will due honor be given to all who like Cournot and Gossen have laboured in a thankless field of human knowledge, and have met with the neglect or ridicule they might well have expected. Not indeed that such men do really work for honour; they bring forth a theory as the tree brings forth its fruit.[2]

Unmercenary or Non-Financial Motives

Any science must always be in some degree an abstraction, but its development consists in filling in more and more subsidiary laws which bring it ever closer to reality. A number of economists in recent years have been delving beyond the wealth motive in work (as well as beyond ' aversion to labor '), and are trying to discover something predictable about these unmercenary or non-financial forces (as we might call them, for want of a better term); and business men through personnel managers are actively seeking and finding incentives to work which are not of the nature of economic goods. The application of this branch of economics to the problem of communism or socialism is obvious, since such systems propose to dispense entirely with the wealth-motive in work.

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[1] Essays on Some Unsettled Questions, pp. 137, 138 (written 1829 or 1830).

[2] Theory of Political Economy, Preface to 2d edition, 1879. Page xxxviii of 4th edition.

Let it be noticed, however, that such a formula as ' psychic income ' hardly more than states the problem. Fetter says:

> It may be seen that (anticipated) *total* psychic income is what motivates our economic activity, — at least as far as this activity is determined by conscious purpose. There are men holding public office to whom the salary received is an insignificant consideration. They are paid largely in public esteem, or in their own consciousness of duty well performed. . . . Man's psychic life is the thing which is of ultimate concern to him, etc.[1]

Similarly Hume stated "Everything in the world is purchased by labour; and our passions are the only causes of labour." [2] (Hume's "passions" are roughly equivalent to what we call instincts.) True so far as they go, but they get us no further than "We do only what we want to do, and we want not merely money." Fetter's remarks on public esteem and conscience offer some clue, but ' psychic income ' is simply what other economists call ' utility.'

A splendid start toward understanding the unmercenary incentives was made by Adolf Wagner about 1879, in his classification of the "Leading Motives in Economic Actions." [3] Wagner was a keen and sympathetic critic of socialism, and his discussion was obviously orientated by its problems. There are five leading economic motives, he said, in pairs of positive and negative, as follows:

1. Desire for wealth (wirtschaftlichen Vorteil) and repugnance of distress for lack of it (Noth).
2. Fear of punishment, and hope of approval (Anerkennung).
3. Desire for praise (Geltungsstreben, Ehrengefühl), and fear of shame or being despised.
4. Impulse to activity or joy in doing, and dislike of inactivity.
5. The moral command, and fear of conscience.

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[1] Economic Principles, p. 28.

[2] On Commerce, par. 12.

[3] Grundlegung, Bk. I, pt. i, pp. 70–136 of 3d edition. "Die Wirtschaftliche Natur des Menschen." See brief condensation of this analysis in Quar. Jour. Econ., 1: 117–129.

Provision for family or other loved ones is assigned to the first class, and curiously, he thinks only No. 5 is not egoistic. His wrestlings with these riddles of hedonism and altruism, and his importations from the leading psychologists of his time (Wundt, Hoeffding, and others) are now of less interest than is the wide historical learning with which he attempts to trace the relative strength of these motives through ancient and modern times. Servile labor, depending on the physical punishment motive almost entirely, has been gradually replaced by hired labor because the latter is more productive, — the wealth motive, apparently, is more usable. The crucial question to socialists is whether, in attempting to dispense with the wealth-drive, they can so develop the motives of praise, of joy in activity and of conscience, that physical punishment will not be necessary on a considerable scale. If not, their indictment of liberalism as 'freedom to starve' will be but a sorry consolation for the rigors of their conscripted labor. On the possibilities of such development he was not sanguine. The large faith in human perfectibility, through proper education of the youth, which had inspired alike such early socialists as Owen and Fourier, and such extreme individualists as James Mill and Bentham, had waned with increasing recognition of hereditary egoistic instincts, and of the rather limited instinctive groundwork of the family affections.

Theory of Creative Instincts

Since Wagner there had been no important additions in this branch of theory — in fact, few economists took notice of it — until the recent vogue of the 'creative instinct' doctrine. This supposed instinct has been thought by many writers of some standing to promise a radical reform of our ideas on work and to point the way toward a great reduction in industrial discontent, — perhaps even to give a solid scientific basis to socialism. We have discussed the psychological standing of this 'instinct of workmanship' and its equivalents pretty fully in Chapter X, but some further examination of it, from the standpoint of work, is called for by the importance of the issues.

It will be remembered that William James sponsored an instinct of constructiveness, along with a great array of others, in 1890, and that Veblen started to write about the instinct of workmanship in 1898.[1] When Veblen expanded his theory into a book in 1913, his psychological authorities (as distinguished from anthropological data) boil down to James and McDougall, the latter being greatly indebted to the former. Citation is made to Loeb's Comparative Physiology of the Brain and Comparative Psychology (published 1900), but Loeb's utterances on the instinct of workmanship appear to have been based upon Veblen's earlier article. We should not overlook that supposed entity, 'invention,' which was the Tarde's twin of 'imitation,' nor Bergson's 'creative evolution,' nor John Dewey's 'creative intelligence.' All these doctrines, but especially the argument used by James, from bee and beaver analogies, have contributed to the hypothesis of a generalized human creative or workmanlike instinct, which underlies the recent social-economic writings of Veblen, Hobson, Taussig, Fisher, Parker, Marot, Bertrand Russell,[2] not to mention numerous lesser lights.

The behavior attributed to the 'creative impulse' varies somewhat with different writers, so that it is scarcely possible to deal with all of them in the same breath. In Veblen, it is a war against waste, a passion for doing whatever the other instincts want done, in the most efficient possible manner. With Taussig it is simply invention of a *new* as well as a more efficient way of doing whatever is to be done. Marot and Hobson emphasize the human craving for novelty, which is supposed to be 'creativeness.' But all agree that the impulse makes at least *some* kinds of work intrinsically attractive to most men if not to all, that it takes no thought of the morrow, and causes its possessors to do good work without regard to pay. The evidence for its existence, apart from the few psychologists referred to, is from the testimony of certain persons as to how they ' feel ' toward their work, and from the objective behavior of some artists, martyrs, and other riders of hobbies. Our characterizations, however unfair they may be to any of the individual authors mentioned, serve to show some of the ambiguities which any one encounters who starts to talk about man's natural creativeness or workmanship.

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[1] "The Instinct of Workmanship and the Irksomeness of Labor," Am. Jour. Sociol., 4: 187–201.

[2] J. A. Hobson, Work and Wealth, Ch. IV, "The Creative Factor in Production"; Taussig, Inventors and Moneymakers; Irving Fisher, "Health and War," Am. Labor Leg. Rev., 8: 9–20 (1918); C. H. Parker, "Motives in Economic Life," Proceedings Am. Econ. Ass'n 1917; Helen Marot, The Creative Impulse in Industry (1918); B. Russell, Proposed Roads to Freedom (1919).

Let us now break up this propensity into the psychological elements at which we arrived in Part II, and then we may be able to answer better the natural question, Why shouldn't we use the ' instinct of workmanship ' as a postulate in our theory of work, since so many people recognize it as a stable human trait?

Prominent among the well-authenticated elements of this workmanlike behavior are the instinctive responses of *manipulation*, and of *visual exploration* directed toward moving or unexplored objects. These two propensities go far to make up native ' curiosity.' What we may call the *appetite for exercise* of all behavior-mechanisms is important here too; it causes us to turn restlessly from one occupation to another as the mechanisms used become fatigued. This appetite, together with the curiosity responses mentioned, contribute to the joint result we call ' craving for novelty,' or ' adventure.' Then there are supposed to be individual *aptitudes* for special kinds of learning, as Woodworth has brought out, which incline our ' interests ' in different directions almost from the first, — some toward any of the multitude of manual occupations, and some toward any of the variety of reading, reflecting and writing vocations. These aptitudes perhaps make up the innate basis of esthetic preferences.

Finally, among the quasi-instinctive springs to workmanship, is the enormously important *desire for the approval* of one's fellows. William James' remark that nine-tenths of the world's work is done by emulation, comes easily to mind. The true artist or scholar or other workman does indeed serve an ideal, and he is more or less indifferent to what other people actually say of his work. But would he ever develop that ideal if he were reared in solitude, or if his society repressed all expressions of praise and blame? We cannot believe it; the imperceptible transition from striving to be praised (in good part, we admit, due to the associations with more tangible rewards and punishments which praises carry) in childhood, by successive steps to the desire for only discriminating praise, is too plain to be mistaken, when once we have learned that associative links are continually dropping out of consciousness. The long-standing bugaboo against associationism, that various inner commands are innate because the subject is not conscious of any connection between them and more primitive impulses, loses its potency when one realizes that all manner of associative connections are forgotten in the same way. Who can tell just what experiences taught him to be afraid of the dark? Or why he likes or dislikes people at first sight of them? In fact, if we were conscious of all associative links we should be simply remembering everything we ever experienced.

Veblen, in his Theory of the Leisure Class, showed how the impulses of emulation build up "pecuniary canons of taste," — cause us to think obviously expensive commodities to be intrinsically beautiful. This associationism might have helped him to a truer theory of the "sense of workmanship." Conscious pursuit of excellence for its own sake, therefore, we attribute to associations with human approval, which apparently in part is instinctively sought, but which also is grounded in many associations of 'utilities' which have resulted from other people's approval of us.

There are, moreover, many other *habitual* elements in the drive of workmanship. The foregoing innate springs of action, interacting with external circumstances, force the subject to take up an occupation. As he learns it, the acquired mechanisms become more and more smoothly operative, many of the antagonistic reponses of mere clumsiness are lost; and so, as Woodworth says, every acquired mechanism becomes something of a drive by itself. It is along this line that we account for the curious attractiveness which problems possess that are suited to our capacity. As a system of knowledge is enlarged, say in history or language or baseball lore, not only are details more easily remembered because of the increasing number of associations which reach out to meet them, but the pursuit of such missing links becomes increasingly vigorous. This result is facilitated, to be sure, by the withering from disuse of other interests that originally competed strongly with the one which was elected to be intensively cultivated.

Now, what difference does it make, whether or not we call this complex mechanism an instinct of workmanship? We reply, the crucial question on which the dispute bears is, can the majority of men be trusted or trained to work equally well and wisely, whether or not their rewards are proportioned to their individual production? And a point of only less importance is how to reduce the ' human costs ' in work, by attention to the instincts. It is only by close attention to each element in this so-called creative instinct that we can make our arrangements for education and for work most effective. The instincts which make up curiosity and the desire for novelty, for example, are naturally favorable to discovery of truth, but not to sustained labor which is monotonous. It is only by poetic license, moreover, that one can call such behavior as we see in the infant's manipulations (showing these instincts nearly naked) ' creative.' If we relied on these instincts alone, our work would be desultory and inconsecutive and hence unproductive, like the activities of men in savage times.

The drive of habitual elements, on the other hand, will be constant, whatever the disciplinary measures by which these habits were originally instilled. Our ordinary social and moral habits become second nature and not unpleasant, when they are finally inculcated by sufficient spankings; and similar it is with habits of industry. Training is most effective, however, when it follows the line of individual aptitude; this fact also is well-known to common experience. And unlike other elements, the desire for approval may be counted on always to give a bias toward socially serviceable activity. People are most likely to approve in us that conduct which is most favorable to themselves. The acclaim which soldiers have always had is in no small measure thus to be accounted for, although there are also many misleading associations which cause admiration to be bestowed on those people who are in fact harmful to the admirers.

It is of the greatest import, therefore, to know whether the impulse to do useful and efficient work is innate or is built up by associations of praise; for if social control were invoked by governors not only to dispense with private property but to suppress all personal praise — which Robert Owen was inclined to do [1] — the society might well find its ' instinct of workmanship ' was fast disappearing. For any engineering or therapeutic work, we can scarcely have our physics and physiology too accurate.

Fear, Pugnacity, Loyalty

Other unmercenary motives in work may be briefly mentioned. The reactions of fear and of escape from pain and confinement are at bottom instinctive and are extremely urgent, and the force of them may be transferred to other stimuli by association. They are thus tied artificially to a task when used as punishments in case the work is not done satisfactorily. This process of artificially tying an original drive to a stimulus that was natively indifferent or repulsive, is shown most clearly by the building up of the wealth motive under division of labor. ' Fear ' of disgrace or of poverty, on the other hand, are not instinctive fear; these are imaginative thwartings of the habitual seekings for wealth and for approval. The inner fear reactions do, it is true, easily become attached to all manner of stimuli, — witness the shock we feel at many an unexpected sight or sound.

It is sometimes said that the fear motives, in mild form, are intrinsic incentives to certain kinds of ' work,' — to adventure, exploration, gambling, or daredevil feats. Possibly; but there are many other elements in the love of adventure too, — the acclaim to successful pioneers, curiosity, and the booty hoped for. So that whatever fear exists may still be a deterrent, although bolder spirits are less affected by it in merely imaginative form.

The energy of the pugnacious or rage responses can conceivably be put to work by skillfully arranged contexts. When the desire for approval is obstructed, as by ridicule, reproof or challenge, the worker's anger is aroused, and some of his ire will be vented on his task. It is quite common to speak of the spur of ' righteous anger ' to reformers, physicians, soldiers. As will be explained in a moment, however, anger in the industrial world is usually opposed to work.

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[1] F. Podmore, Robert Owen, p. 177.

Love, loyalty, devotion are names which apply, as Shand and McDougall have shown, not to pure instincts but to complexes of instincts and habits which converge upon some external objects, such as country, home, God, friends. It is very difficult, therefore, to generalize to any good purpose, about ' loyalty,' as if it were an instinct. The usual connection between love and work is through the goods which work procures for loved ones. It is interesting to use these familiar devotions as analogies in speculation on how patriotism, for example, might gradually be extended to include industrial service, and how by kindly and honest services business houses can promote loyalty among their employees.

The scope of original love is, we have seen, exceptionally ill-defined. ' Liking ' and ' loving ' are akin in popular speech, but psychologically, liking or seeking is characteristic of the whole range of positive or pleasant reactions. Any object associated with a pleasant response may become likable, and, so far as consciousness reveals, wanted for its own sake. McDougall speaks a little as if any unselfish motive must have some of the parental impulse in it, but we have seen that ' selfish ' seeking for social approval often leads to the most altruistic conduct, and that such conduct becomes so habitual that the original self-reference becomes entirely obscured to the subject. (McDougall recognizes this fact in his account of the ' self-regarding sentiment.')

The emulative motives, ranging from mere desire for society and friendly intercourse and approval with dread of anything like ostracism, to strife for preëminence and mastery (and to envy of others who succeed better in these respects), are to be counted in here again. When they are considered as part of the ' creative impulse,' they have been refined to the ideal of praiseworthiness; but the more common case, we all know, is that of working for the approval of real persons, — and the more there are of them the better. Most of us will sacrifice praiseworthiness if only we can get the visible marks of distinction. This group of motives is susceptible in an unusual degree of being harnessed to tasks without the medium of material reward; work whose payment is known to be chiefly in esteem is something quite familiar. Every mother uses this principle at times, and business houses are becoming conscious that competitions among their employees may be used to the benefit of all concerned. Hierarchies, as in the priesthood, academic circles, and the army, seem clearly to provide spurs to energy in addition to the material emoluments, and they are the more effective, just as money payments are, the more accurately that prizes are apportioned to merit. Adam Smith was a keen psychologist, as usual, when he remarked:

> And thus, place, that great object which divides the wives of aldermen, is the end of half the labors of human life. . . . Rank, distinction, pre-eminence, no man despises, unless he is either raised very much above, or sunk very much below, the ordinary standard of human nature.[1]

INVENTORS AND MONEY MAKERS

Let us consider for a moment the psychology of a peculiarly important kind of work, — the improvement of the industrial arts. This is the function of both the inventor and the entrepreneur or manager, and their services correspond to two phases of the learning or reasoning process; the inventor as such suggests a technical solution of an economic problem, and the entrepreneur tries it out in the whole economic situation.

Taussig's treatment of this topic is in the main admirable, though, as we have indicated, the ' instinct of contrivance ' suggests a misleading oversimplification.

Invention is the finding of new combinations of old tricks or responses, which will enable us successfully to deal with a baffling situation. It is simply an act of reasoning, and like all reasoning, is carried out by trial and error. The instincts comprehended under contrivance, manipulation and curiosity, undoubtedly play a part in invention, especially in making the work attractive, regardless of material rewards; but the *direction* of people's abilities toward certain kinds of invention is, as Taussig says, furthered by the prospect of gain. We are all inventors of one kind or another, for we all solve problems.[2] Cats are inventors; when their activities are directed toward certain problems in puzzle-boxes by the prospect of food, they invent solutions to those special problems rather than solutions to others, such as getting at mice or balls of twine. And if a good living were assured to all of us who would devote our time to contriving new devices of any kind, without regard to their practical usefulness, we can hardly doubt that a great craft of inventors would soon develop. It is true that necessity is the mother of invention, for all our reasoning, as we have seen, is always done in the forked-road situations where a solution is necessary in order to quiet our purposes. Not all these searching purposes, to be sure, are severely practical; some of them may develop out of instinctive explorative responses which may be called ' idle ' curiosity.

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[1] See above, Ch. V.

[2] Tarde's "invention and imitation" is a suggestive formula of social development; and it is quite true that new tricks spread in circles from the point of origin. But in our view both invention and imitation are acts of learning, and when we realize the ramifications of the learning process the formula does not look so simple.

That the inventive bent is stronger in some people than in others, and that it turns, in different individuals, to varying classes of problems, is but one illustration of the general fact which psychology is coming to acknowledge without being able as yet to explain, — that there are innate individual peculiarities of proclivity or interest, which are not detailed instincts, but which direct in a general way the individual's learning, making him more interested in one subject-matter than another, enabling him to work hard at it and to do well in its execution. *Poeta nascitur, non fit*, and similarly with inventors, musicians, athletes, and all persons with hobbies. As Taussig concludes, the inventing genius shades off into our common ingenuity, and while the great inventor will almost starve, if necessary, to ply his beloved trade — just as the poet and vagabond will — there is no question that rewards of wealth turn lesser lights toward inventing, and turn all inventors in some degree toward the problems that are most important economically. As to the need of giving big prizes to the geniuses, that is a problem common to all economic motives, and it properly belongs to the subject of economic welfare.

THE BUSINESS MAN AS INVENTOR

In regard to the business man as competitive director of economic processes, he is always partly an inventor, for he must continually devise new combinations of methods to meet the existing circumstances. And he not only devises methods but he tries them out and stakes his wages on their success. The risk incident to new ventures is therefore really characteristic of the business man; a business man who makes more than wages and yet runs no more than a laborer's risk is in fact a landlord, is the proprietor of an external source of differential gain.

As we have seen in our consideration of the motives to adventure, it is doubtful if risk in its pure state is an allurement to anyone; the case is simply that the lure of possible gain overcomes the disinclination from fear of loss. With the increase of knowledge, risk becomes more clearly a cost, which will be incurred only on some kind of insurance principles. Business profits are a rough kind of insurance; and in all lotteries, the greater the chance of loss, in general the larger must be the uncertain prize. But we should not argue that this tendency is at all exact; the obstacles of ignorance and of obsolete habits are to be reckoned with. The argument is rather that judgment on the timeliness of new devices in the whole economic situation — judgment whether the device will 'pay,' which means whether people will want it badly enough to pay all the costs involved in devising, making and selling it — and assumption of the risks connected with that judgment, constitute a productive service as much as the technical contrivance. At this point we take issue with Veblen, who thinks the technical men are the real producers, on whom the men who accidentally own capital fatten parasitically. The use of monopoly power to bargain unfairly with penniless inventors is of course a phase of our existing situation that is to be reckoned with, but the inference that society would be best served by turning the control of industry over to the technical men is too hasty.

As the business man is always something of an inventor himself, he partakes of the intrinsic rewards of inventing, by the satisfaction of curiosity, and his other contriving instincts. Loyalty to an enterprise he has been identified with, and pride in its reputation, are, of course, strong motive forces. The appeal of personal domination, which is in between emulation and rage, is a force in business direction too, but only because society has not further limited the power which control of industry gives, nor instilled sufficient habits of thought concerning social welfare, to run counter to the domination motives. As to the wealth motive, the same remarks as made above concerning inventors apply.

THE IRKSOMENESS OF LABOR — FATIGUE

Let us now inquire more closely into the nature of the psychic resistances to work. It is widely recognized now, that although labor may be, on the whole, a curse, it is by no means always irksome. Probably most of us feel a predominating enjoyment of our work during the earlier part of the day, or at least in certain moods. But whenever the work is felt to be distinctly irksome, that fact may probably be ascribed to unpleasant or negative reactions, chiefly of the obscure inner sort that Cannon studied. These, in turn, are to be traced to any of at least three fairly distinct sources, namely, (1) fatigue and ill health, (2) disagreeable surroundings at work, (3) thwarted positive impulses (opportunity cost).

Most obvious is the double source of fatigue and ill health. We class them together because fatigue may in part be conceived as temporary illness, in which the acid products of exertion in the body give rise to unpleasant reactions or inhibitions (which we have lumped together as "the appetite of repose," on account of the recurring character of the condition) comparable to the effects produced by toxins and bacteria in disease. The energy-stores of the neuro-muscular mechanisms just used, become, of course, considerably depleted, yet in the muscles and nerve-fibers themselves the exhaustion is not complete in severe fatigue. Stimulation of these muscles is still possible through other circuits, with an incidental repression of the subjective evidence of fatigue. Such is the case when young people who have become tired by working during the day go to a dance at night, or when martial music suddenly reaches the weary traveler.[1]

Doubtless there are always numerous dormant reserves like these, which can be tapped by proper variation in the stimuli of the situation. Many factories are instituting fifteen-minute rest periods in the midst of each half-day (reminiscent of the

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[1] P. G. Stiles, The Nervous System and its Conservation (1914), Ch. VIII.

'recess' of school days!); the success of which probably depends more on the 'moral' refreshment than on purely muscular recuperation. In some cases music is served up with the work.[1] It must be conceded that this process of tapping reserves in many cases cannot be done day after day without injury to the health. Dancing of evenings can be overdone. Yet we are by no means to presume that any extra zeal aroused on the job by psychological devices reduces the worker's health or strength or recreation. Even if it be assumed that his total output of energy day by day is constant, which is not probable, the extra work done in the mood of contentment may merely use the energy which otherwise would be spent in 'kicking against the pricks,' that is, in the sum of the reactions which try to avoid the unpleasant situation.

Monotony is a real curse in work. Any narrow set of responses early becomes fatigued, and the fresh impulses held in leash give rise to an unpleasant restlessness. Something of monotony is not lacking in any activity under the sun, but it is accentuated to the last degree in the semi-automatic machine feeder which division of labor has finally produced. To the psychologist's provocative remark that feeble-minded people make the best machine operators, it is sometimes replied with some truth that many workers like a narrow routine, because the performance of it becomes so automatic by habit that they are imaginatively released to live in a world of fancy. The last thing they want to do, this reply continues, is to have to think about their work, to solve fresh problems continually. But the best test thus far available lies in the figures of 'labor turnover.' These statistics are said to show that workers stay at the repetitive jobs a shorter time, on the average, than at work involving more variety,[2] although the material has not been carefully studied from this point of view.

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[1] Phonographs were installed in three sorting rooms of the Minneapolis post offices and played frequently while some fifty night clerks worked. A comparison of two nights when equal amounts of mail were sorted by an equal number of clerks at three stations, one night without music, one with music, showed that 14 per cent more errors were made on the evening without music, and the total time taken was also about 12 per cent longer the evening without music. These comparisons were made about a week after the installation was first made. See Minneapolis Tribune, August 21, 1921.

[2] Link (Employment Psychology, p. 112) makes the statement based upon care-

It is to be noticed, however, that no large proportion of even factory work is of this extremely monotonous character. Slichter says:

> It is doubtful whether half of factory workers are engaged in highly repetitive work. Most unskilled laborers, truckers, lumpers, most skilled laborers (artisans), and many semi-skilled *hand* laborers are engaged in work which is not a repetition of the identical movements.
>
> The tendency, he continues, clearly is for the repetitive nature of factory work to increase, and "scientific management" with its policy of subdividing and standardizing has given the tendency a great impetus.[1]

The manager's ideal seems to be reached in something like the Ford Motor shops, where nearly all the operations are so minute that anyone can soon learn to repeat them. But machinery that has become semi-automatic is well on the way to becoming completely automatic, which is the best case of all.

The upshot of it is that fatigue-effects and ' the case for the shorter working day ' are not quite synonymous. Short working hours, to be sure, have many potentialities in the way of cultural and civic development outside the working place, and no doubt their recreational effect is often sufficient to increase production. Comparative studies on production as compared with hours of labor are of extreme importance. But continual shortening of

ful study of conditions in a large American munitions factory, that "The turnover, among such (machine) operators, is unusually large for a variety of reasons, most prominent among which is the monotony and strain of the work."

Slichter, who has made the most elaborate analysis of turnover figures in general, gives the same impression, saying that to interest men in their work there must be "more or less variety. The same thing done continuously soon becomes tiresome physically and mentally" (The Turnover of Factory Labor, p. 188). He also finds (Ch. IV) that the turnover is strikingly high in certain relatively unattractive jobs within a given plant, and especially monotonous work falls in this class.

It is interesting that Herbert Spencer hit this nail on the head: "Clearly these adjustments brought in on account of mechanical inventions make the motions of the workman himself relatively automatic. At the same time the monotonous attention required, taxing special parts of the nervous system and leaving others inactive, entails positive as well as negative injury" (Sociology, IV, p. 253). Reitell, who quotes this statement (Jour. Pol. Econ. 26: 274), presents evidence from the steel industry to show that such effects are offset by the greater productivity of labor and exemption from many strenuous tasks which machinery has brought about. Cf. Taussig, Inventors and Money-Makers, p. 62.

[1] *Op. cit.*, pp. 188, 189.

hours is not necessarily the only nor the best remedy for fatigue and monotony. Deliberate arrangements for variety in tasks, for the stimulation of initiative and ingenuity,[1] especially by well-planned lines of promotion and by marks of distinction for merit, are already used by progressive employers in conjunction with reasonable hours to secure the maximum of production and comfort.

The use of music, singing and dancing as recreative and stimulating features in the workshop is a return to an age-long practice, connected obscurely with the physiology of rhythm. The eminent German economist Bücher has investigated this matter historically, and finds that from the earliest times people have been wont to carry on various tasks ' to the time ' of chanting or other music. The frontispiece of his Arbeit and Rhythmus shows an ancient Greek sculpture of four workers kneading bread while a fifth is playing the flute; and the book contains a large collection of work songs from different lands and times in numerous occupations. All of us are somewhat familiar with sailors' chanteys, smiths' songs, and marching tunes, and with the person who spontaneously sings or whistles at his work.

The difficult question is as to the relationship, — what's the reason for it? Some coöperative activities, such as working a windlass, prying at a heavy weight, performing a gymnastic figure, are evidently much facilitated as to coördination by sounds or other signals adjusted to the technical rhythm of the work.[2] But in many efforts like the bread baking, marching and dancing, we go out of our way to perform in concert to music. We *like* to do them better that way. To a considerable extent this pleasure is associative; the music, even during work, calls up the pleasant recreative responses that were active formerly along with the musical sounds, and these responses, by secretions or otherwise, reinforce our work responses, as does other emotional excitement. Beyond these points there may well be ways of playing on innate rhythm-mechanisms to promote work, but the matter is still too obscure to make further comment worth while at this place.

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[1] Meyer Bloomfield, a leader in the new profession of employment management, has given some suggestions toward encouraging employees to "think on the job." See R. W. Kelly, Hiring the Worker (1918), p. 48.

[2] A modern factory example of this kind is suggested by Link: "The preliminary study of typical dial machines had revealed that the fundamental requirement was the ability to acquire a certain bodily rhythm in feeding material into the dial and in timing the movements of the hand and arm with those of the machine. Some operators acquired this rhythm very readily, others only after a long time, and still others never." *Op. cit.*, p. 118. Apparently music would have been valuable in this case.

Disagreeable Surroundings and Indignity

The second class of causes of irksomeness in work includes disagreeable odors, sounds, heat, dampness or darkness, dust, fumes, lint, and so on. Nature has provided some protection against these offenses by the wonderful mechanisms of adaptation in the sense-organs, so that the worker gradually becomes inured to them. Such protection is inadequate, however, and when labor becomes scarce the turnover figures show up the more repulsive working conditions and it becomes profitable to make considerable expenditures to abolish them.

A third case of repugnance to labor is found in unpleasant or negative reactions which are stimulated by the thwarting of positive impulses or by circumstances not covered by the preceding groups. In studying the instincts of rage, we learned that these are stimulated by the hampering of nearly any other response which has been started. Compulsion seems to be instinctively fought. Unreasoning anger and insistence on personal domination is an outstanding feature of labor struggles, on both sides, according to all observers, and these impulses are usually born of original disputes over wages. Even in self-imposed tasks, the element of compulsion often makes us rebel, run away, commit sabotage against ourselves. The characteristic vagueness and idiosyncrasy of introspection make the situation difficult to analyze, but it seems clear that when we can work whole-heartedly, which means that the vagrant impulses are not stirring, whatever unpleasantness tinges our consciousness may be traced to the other two cases. In this direction the Freudian doctrines will ultimately be of service, when they have become more closely aligned with physiology.

The motives centering about social approval or disapproval are very important in this group. So far as certain labor is conventionally held in contempt, and the laborer realizes it, the work is made disagreeable to him by frequent arousal of the unpleasant reactions of shame. College boys doing menial work have curious reversals of feeling in this respect; some people honor them for it, and others snub them, so that doing the same work, the boys' emotions vary according to who sees them doing it. This source of irksomeness was the point of Veblen's earlier article on "The Instinct of Workmanship and the Irksomeness of Labor." He pointed out that great physical privations are gaily undergone in war and sport, because these occupations are held in esteem; and consequently it is hardly the fatigue but rather the contumely of ordinary work which make it repulsive. That is an extreme position, but it contains the truth that conventional ideas concerning the dignity or indignity of labor count for much in making it attractive or the reverse. The situation has been aggravated by tyrannical masters and petty officials, who treat all common laborers as if they are necessarily destitute of self-respect, pride and hope of advancement,[1] and by the frequent loss of identity of each man's work, which removes from him another possible source of gaining esteem.

'UNPRODUCTIVE SURPLUS' IN WAGES

Once more we find the consideration of producers' motives leading us to the doctrine of rent. The rent element in wages is closely comparable to that in interest; if all wages were cut off from their recipients, obviously a good part of the work would stop, nevertheless many individuals are able to get extra large payments for their personal services, on account of keen competition among buyers. If these individuals were unable to get more than a considerably less amount, they would still render just the same services. Your industrial managers, and other much-wanted individuals, who get $25,000 or $100,000 or more a year, might, it is thought, by skillful means be trimmed down to some average subsistence like $2500, and they would still have as much as is good for them, whilst the rest of us could be rescued from our poverty by redistribution of this 'surplus.' It is not denied that the services of such gifted people are often 'worth' what they are paid, if we had to choose between having them and not having them; but this one-sided standard, if the only one applied, would justify every monopoly price.

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[1] Cf. Slichter, *op. cit.*, pp. 192–193.

Again, we have the radical proposals of various sorts of socialism, which could guarantee everyone a comfortable subsistence and would allow no one to get very much more, and besides this there are various less heroic proposals. Progressive taxation of 'earned' incomes, for example, even increasing sharply at each step, will not discourage the more valuable men's industry, according to the surplus theory. We shall not discuss any of these programs in detail, but shall point out a few general considerations springing from the subject of motives.

The *laissez-faire* economist will justify the arrangement of allowing each man to get all he can for his services, in fair open competition, on the grounds that:

1. Because of the expansibility of each man's wants for wealth, payment according to results is the most reliable way of getting each to do his utmost work. If, on the other hand, the wealth he is to receive is a fixed quantity regardless of what he does (which is now the condition of very few men's employment, notwithstanding the socialist writers' analogies drawn from army, scientific or governmental posts), his public spirit and his desire for acclaim will be a much less certain stimulus to production, especially since necessarily all cannot be given distinction. With production so greatly reduced, equal distribution will have benefited no one.

2. In accordance with the general theory of value, high wages in any occupation, such as that of the business manager, is an indication that there is a scarcity of people able to do that kind of work relative to demands for it; and is at the same time an automatic inducement to the rising generation and to others who have any mobility, to get into that occupation and relieve the scarcity, instead of crowding still further an already abundant supply in other occupations. If a community has plenty of common laborers and few skilled artisans, and if it insists on paying all alike,

both as to wages and working conditions in general, there is little prospect that common laborers will take the trouble to learn the skilled trades, and so the proportions between the two groups will become more and more maladjusted. There is a constant tendency, given free competition, to the equalization of wages as well as profits between occupations.

3. Within each occupation, the *laissez-faire* economist would now say, there is no tendency toward equality of wages between individuals, because some men are naturally better workers than others. The more valuable one perhaps gets something like a rent, but the peculiar merit of free competition in this respect is that it tends to put each man where he is most needed, that is, where the job he can do is so much demanded that this employer can better afford to hire him than any other employer. The cities which have the most baseball or moving picture or grand opera enthusiasts, for example, are thus assured of getting the best talent, and such talent is accordingly made the most of.

Now there are plenty of objections to be made to all these propositions, into the mazes of which we cannot just now go. It will be said, for example, that this talk of value as an indicator of the greatest demand refers only to greatest purchasing power, and that an unjustifiable part of the world's productive energy is now drawn into the production of folderols for the rich oligarchy. Again, one may contend that while competition has some tendency to put men where they are most needed, it cannot perform this function as quickly and smoothly and democratically as some organized public authority can (state, syndicate, guild or what not). If we do guarantee everyone an equal emolument, this reply goes on, we shall not leave them all to shift for themselves; we shall train each at public expense for the job for which he is best fitted, and we shall then distribute all where they are most needed by the community as a whole, not according to the bids of the money bags.

Judgment on the merits of this dispute depends on a great many factors which have to do with the efficiency of any public service, especially a public service swelled to direct all large-scale economic operations as well as the numerous other functions of government. The matter is so complex that our knowledge of motives will take us but a little way. We have seen that human nature in general is plastic and teachable; in this circumstance lies hope both for socialists and individualists. Both must rely for amelioration on an increase of knowledge and of correspondingly wise social control. The public service will presumably become capable of better things progressively as the citizens become educated in democracy, but this same education may be expected to make private business more democratic, with the road to talent more open than ever before.

The Hope in Emulation

The pivotal question, however, is whether people in the mass can be trained to labor for the common good anywhere nearly as assiduously as they have always labored for their own interest and that of their immediate circle. Past experience in many ways tends to validate Taussig's opinion that, although there are always a goodly number of people who are innately capable of such large devotion, the masses probably could not ever be educated up to it. Socialistic and coöperative reformers generally may be assigned to the first and smaller group; and it is suspected that the exuberance of their own public zeal leads them to hope impossible transformations of motives, by education, in the rank and file. One may easily overdo this line of argument, for we know that even the poor thing we have to offer as education today, no matter to whom it is applied, pretty generally has the effect of giving its object wider and less selfish interests.

Yet the facts of heredity in general and of innate mental variability, as shown by accumulating tests, make the hypothesis plausible that some individuals may always be expected to have pugnacious or predatory impulses stronger in proportion to the other elements in their nature than is the case with other individuals of their generation. It would be foolish to expect to train all men into poets or contortionists, — though much could be accomplished in these directions; and it may be equally futile to hope to instill into all the virtuous will which makes one love his neighbor as himself. The great strength of the system of competition, from the standpoint of production, is that it does not depend upon all people wanting the same things, such as the public welfare or the honor of being considered a good citizen, or workmanship for its own sake, or exemption from punishment, but it appeals to each through whatever wants will move him. You do not have to depend upon Smith the baker being a kindly man or an incorruptible official, nor even to concern yourself about what sort of thing he does want. You give him money and get your bread, and proceed similarly with Jones the butcher, and then they make themselves happy each in his own way. The desire for wealth, therefore, is admirably adapted to appealing effectively to all men if their interests are bound to be diverse.

There are two master motives in human nature, however, which all states have played upon to develop whatever good citizenship they can boast of, and these may conceivably be engineered further toward some such goal as the socialists propose. We mean the desire for social approval and the dread of pain or confinement. Social control, as we have insisted several times, rests principally upon these foundations, in that laws and customs so far as they are generally observed, are observed by the many because it is honorable and decent (i. e., respectable, praiseworthy) to be law-abiding, and by the few because physical punishment is the penalty for infraction. Writers frequently point out that the only communist societies which have achieved a measure of success are those bound by strong religious ties, such as the Shakers. In our view such religious sanctions are blends of original love of approval and fear, as is good citizenship in general.

But to raise permanently the standards of honor or citizenship to which everyone can be expected to conform, with the necessity of punishing only a small proportion, is a slow and uncertain matter, for customs which are more honored in the breach than in the observance are worse than none at all. The Russian experiment in communism appears now (1920) to be breaking down and losing the sympathy of labor leaders in other parts of the world, just because it was not able over night to instill devotion to the common good into the common workers, and hence had to resort to whole-sale military compulsion. Slavery called by any other name tastes as bitter to all of us.

Out of the mass of conflicting testimony from that unhappy country let us take one straw to indicate the wind. On Easter 1920 the official Soviet paper was filled with articles by Lenin and other leaders,

> all devoted to the question of labour in the Socialist State and the need in the present crisis for self-devotion to labour of citizens conscious of the country's crisis, and for compulsion for slackers; all explaining the difference between compulsion and disciplined labour in the capitalist State and the same in the Socialist State by saying that in one men were working for employers, and in the latter each man was working for the good of all, including himself.[1]

Even assuming that the governmental machinery were run in a perfectly disinterested manner for the whole society, it seems vain to us to expect to move masses of people, accustomed to individualism, by this perfect but cold logic of altruism. It is no use either to hope for the virtuous will from mere enlightenment; because there are too many real conflicts between the individual's natural vital interests and the interests of his society, — too many occasions when for the public weal, if he is a good citizen, he must *want* to sacrifice himself, even to the death. The egoist will be made only more cunning by a larger knowledge of the laws of nature.

But there are seeds of devotion in human nature, whether they be ultimately instinctive desires for social approval or parental instincts or what not, which by long and careful watering are capable of developing the flower of the will to self-sacrifice. This will we now see on a grand scale in the nobility of armies, but it is revealed on only a less grand scale in the ordinary honesty, truthfulness, and kindly helpfulness of common life. Such plants of honor and compassion, we believe, may be continually nurtured to higher levels, improving the provision for all interests, whatever may be the ultimate limits of their growth.

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[1] Moscow correspondence, Manchester Guardian Weekly, April 23, 1920.

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